GRÚAS

12362-63

Harnischfeger Corporation.

---	Packing List.
---	Deformaciones en la grua Nº2.
FS2364	TSA 80 Brake perfomance.
FS2365	13 SA 600 Brake performance.
FS2366	13 SAH 600 Brake performance.
FS2367	11 SA 300 Brake performance.
---	Care and maintenance of P & H Drum controllers.
209.03(5)	Crane gearing.
209.03(8)	Welded box type girders. Construction features.
209.03(9)	" " " " " " .
212.03(1A)	Type "H-M" roller bearing trolley.
212.03 (2)	Type "H" sleeve bearing trolley.
223.05(2)	P & H manual drum controllers. General descrip..
223.05(9)	A.C. Protective Panels. General description.
223.05(10)	Limit switches for hoist motion.
225.03(1)	Lockheed Hydraulic foot operated brake.
225.03(2)	" " " " "
225.05(1)	P & H Solenoid operated brakes.
225.05(2)	" " " " .
226.03(1)	Lubrication chart.
576.03(1)	Type HEW Intermitent rated Wound motors.
576.03(2)	" " " " " " .
---	P & H Industrial type Hydraulic Brake.
Form D-123	H-Trolley specification.
Form D-127	Bridge box girder specification.(PB-1).
Form D-128	Bridge I beam or box girder specification.
---	Recommended Spare Parts List. (Crane Nº 12362-3)
Bulletin C3	P & H Overhead Traveling Cranes.
Bulletin C6	" " " " .
Bulletin C7	" " " " .

(Planos).

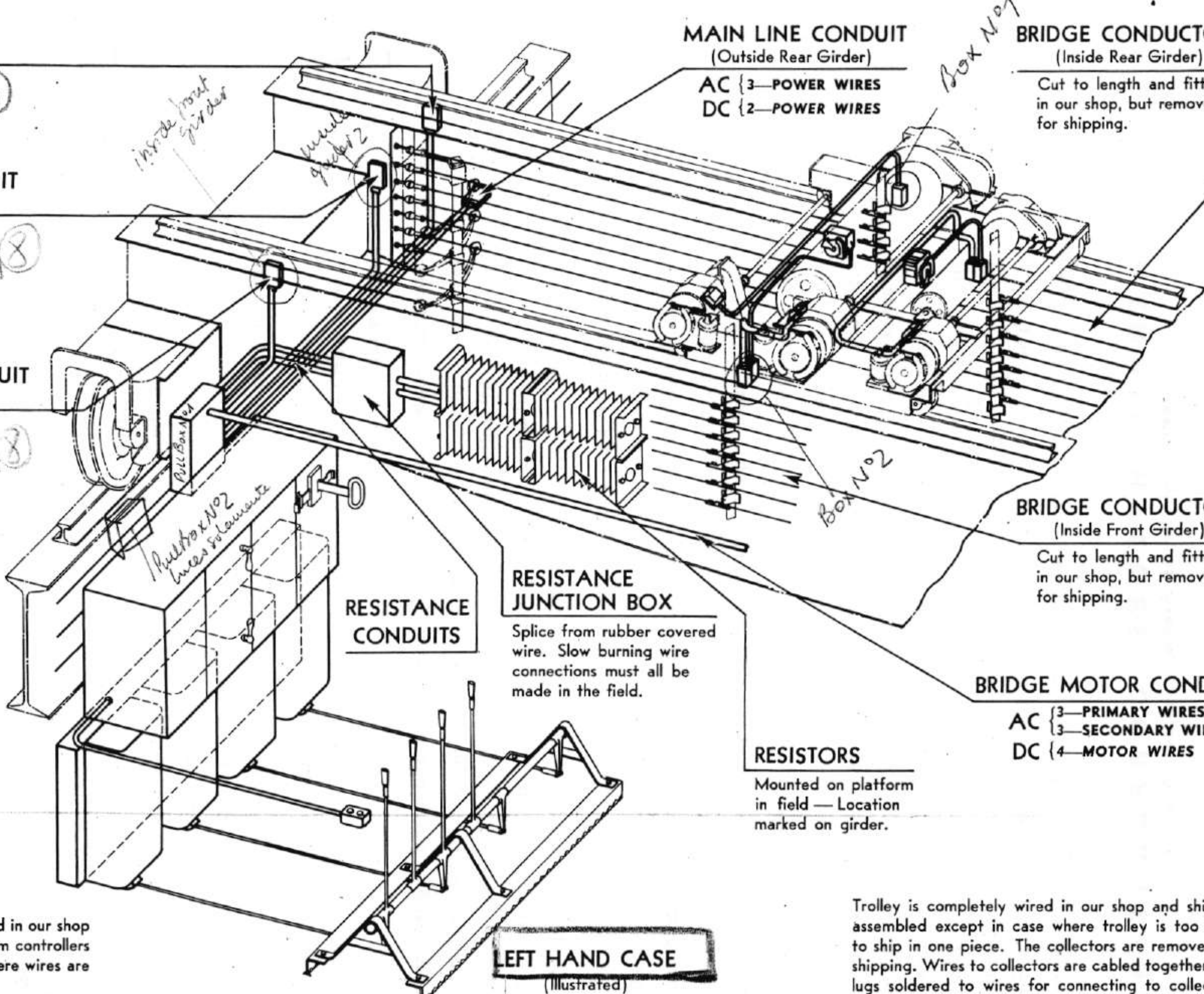
16 A 69	Bumper and details.
28 A 3091	Front platform and cage.
28 A 3092	Welded box girder.
28 E 3162	Bridge shafting.
28 E 3163	Rear platform.
29 A 429	Hand railing.
29 A 430	275 Ton. Lifting beam.
29 E 1444	End Tie.
31 A 1001	Girt-Main.
31 A 1013	End Truck.
31 B 561	Auxiliary girt.25 Ton.
100 A 504	Hoist gearing layout.
100A 1167	Trolley layout. 25 Ton. Aux.
100 A 1168	Hoist assem bly. 150 Ton Trolley.
100 E 642	Trolley drive.
100 E 792	Truck assembly. PS-30 bridge part
101 A 18	Wiring diagram. 4 motor powerhou crane.
CP 577	Lifting beam in higest position
K 54884	Rotor lifting attachment.
K 54885	Lifting beam details.

Sketch S-3432	8-Parts reeving.
Sketch S-4499	16-Parts reeving.
Sketch S-5052	Support for limit switches.

--- Test Cards of motors.

WIRING ARRANGEMENT and CONDUIT LAYOUT

For Standard 4 Motor P&H Electric Crane



TROLLEY MOTOR CONDUIT
(Outside Rear Girder)
AC { 3—PRIMARY WIRES
3—SECONDARY WIRES } 6
DC { 4—MOTOR WIRES

AUX. HOIST MOTOR CONDUIT
(Inside Rear Girder)
AC { 3—PRIMARY WIRES
3—SECONDARY WIRES
1—LIMIT SWITCH WIRE } 8
DC { 4—MOTOR WIRES
1—LIMIT SWITCH WIRE

MAIN HOIST MOTOR CONDUIT
(Inside Front Girder)
AC { 3—PRIMARY WIRES
3—SECONDARY WIRES
1—LIMIT SWITCH WIRE } 8
DC { 4—MOTOR WIRES
1—LIMIT SWITCH

MAIN LINE CONDUIT
(Outside Rear Girder)
AC { 3—POWER WIRES
DC { 2—POWER WIRES

BRIDGE CONDUCTORS
(Inside Rear Girder)
Cut to length and fitted in our shop, but removed for shipping.

BRIDGE CONDUCTORS
(Inside Front Girder)
Cut to length and fitted in our shop, but removed for shipping.

RESISTANCE CONDUITS

RESISTANCE JUNCTION BOX
Splice from rubber covered wire. Slow burning wire connections must all be made in the field.

BRIDGE MOTOR CONDUIT
AC { 3—PRIMARY WIRES
3—SECONDARY WIRES
DC { 4—MOTOR WIRES

RESISTORS
Mounted on platform in field — Location marked on girder.

LEFT HAND CASE
(Illustrated)

Cage is completely wired in our shop.
All conduits from cage to crane are fitted in our shop and removed for shipping. The wires from controllers terminate at rear of protective panel where wires are bundled and placed for shipping.
All wires have identification tags.

Trolley is completely wired in our shop and shipped assembled except in case where trolley is too large to ship in one piece. The collectors are removed for shipping. Wires to collectors are cabled together with lugs soldered to wires for connecting to collectors.
All wires have identification tags.

OVERHEAD TRAVELING CRANES
WIRING ARRANGEMENT AND CONDUIT LAYOUT FOR STANDARD P&H 4 MOTOR ELECTRIC CRANE

SALES MANUAL
Sheet No. 223.05 (13)
Effective: 2-24-42
Replaces: New

Considered as one of the most advanced steps towards simplifying the task of crane erection, all wiring and electrical equipment on P&H electric traveling cranes is arranged and placed to eliminate all possible confusion and facilitate field wiring of such equipent.

All P&H electric traveling cranes are completely wired in the Harnischfeger shops by skilled electricians and all conduits are machine bent and necessary wiring arranged and accurately fitted to meet underwriters' and code requirements. To facilitate shipping it is necessary that the wiring material be removed from the crane. However, in so doing all this material is match marked and properly tagged and identified so as to facilitate field erection. The cage is completely wired and is left intact for shipping purposes. All conduits from the cage to the crane are, however, removed before shipment.

The wires from the controllers terminate at the rear of the crane protective panels, where such wires are coiled and tagged and properly placed within the cage in this manner for shipment.

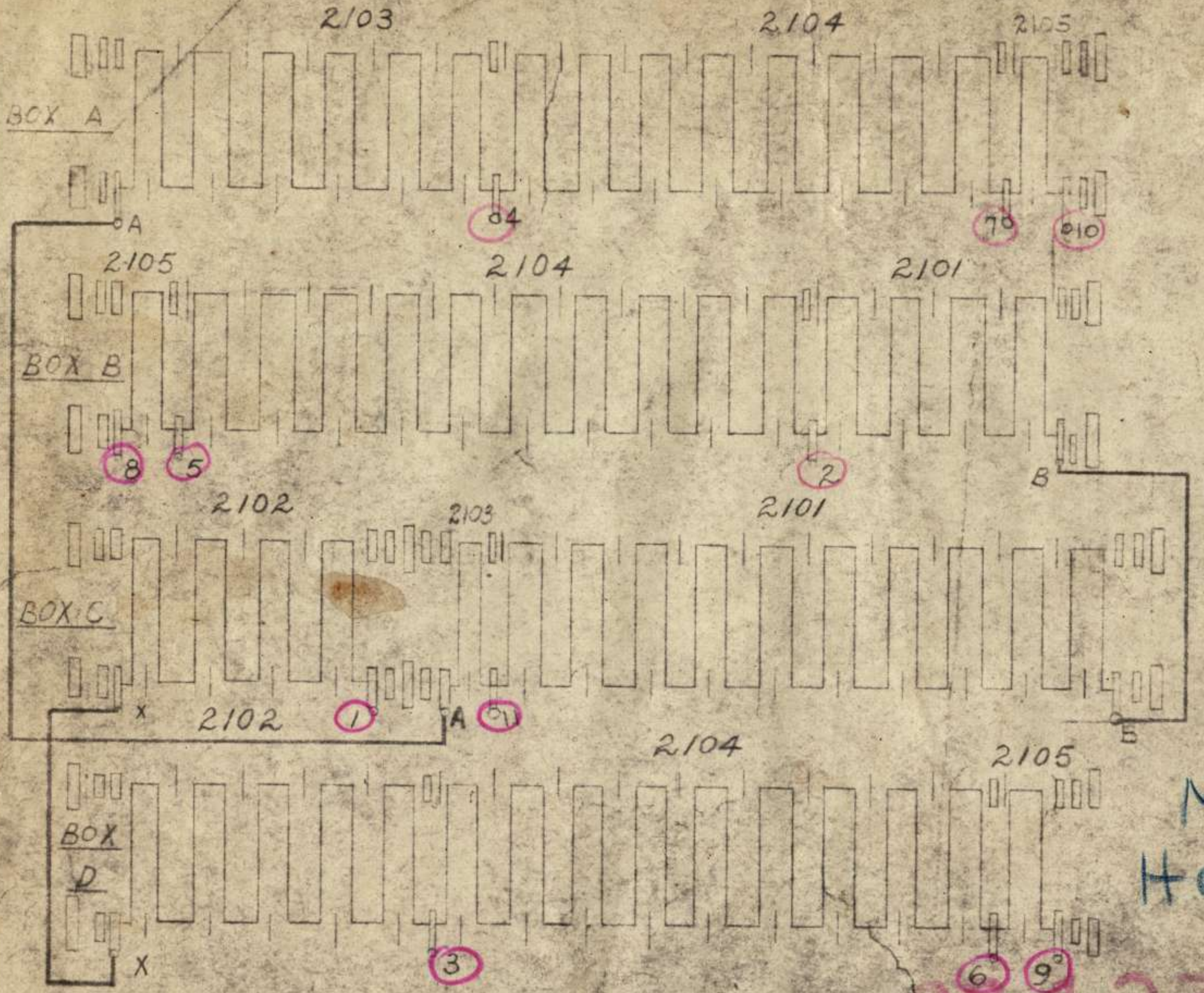
The crane trolley, too, is completely wired in our shops and shipped assembled, except in such cases where the trolley is too large to allow shipment in one piece. All collectors and collector posts are removed from the crane before shipment but the wires complete with lugs soldered to them are corded together and properly identified and tagged for connecting to the collectors.

Bridge conductors are cut to length and fitted and after proper identification are removed from the crane before shipping, making it also necessary to install these bridge conductors in the field. All resistors are mounted on the crane platform and are removed for shipping purposes. However, their location is stenciled on the crane girder or platform to facilitate proper assembly in the field.

The perspective illustration appearing on the inside spread of this manual sheet is typical of the required field connections necessary to complete the assembly of a standard P&H 4 motor electric traveling crane. It will also help to assist in the locating of the electrical apparatus for simplified field erection. In referring to the illustration your particular attention is called to the fact that it applies to both AC or DC applications and that the necessary changes relative to the number of wires required are clearly indicated for ready reference. The illustration can also be used as a basis for determining the wiring and conduit requirements and arrangements for P&H 3 motor crane as well.

LITHO IN U. S. OF A.

NO. REQ	P#	NAME OF PART
6	2105	GRIDS
54	2104	GRIDS
14	2103	GRIDS
18	2102	GRIDS
28	2101	GRIDS
9	4- K48295	TERMINAL
125	917	MICA WASHERS
9	918	STEEL WASHERS
4	TABLE A	FRAME (LARGE)



STEP	OHMS RES
11-2	4.760
1-3	1.340
11-4	1.134
2-5	1.120
3-6	1.008
4-7	.896
5-8	.086 ✓
6-9	.086 ✓
7-10	.086 ✓

MAIN
HOIST

CR-12362-3

52582 G4 GRID RESISTANCE

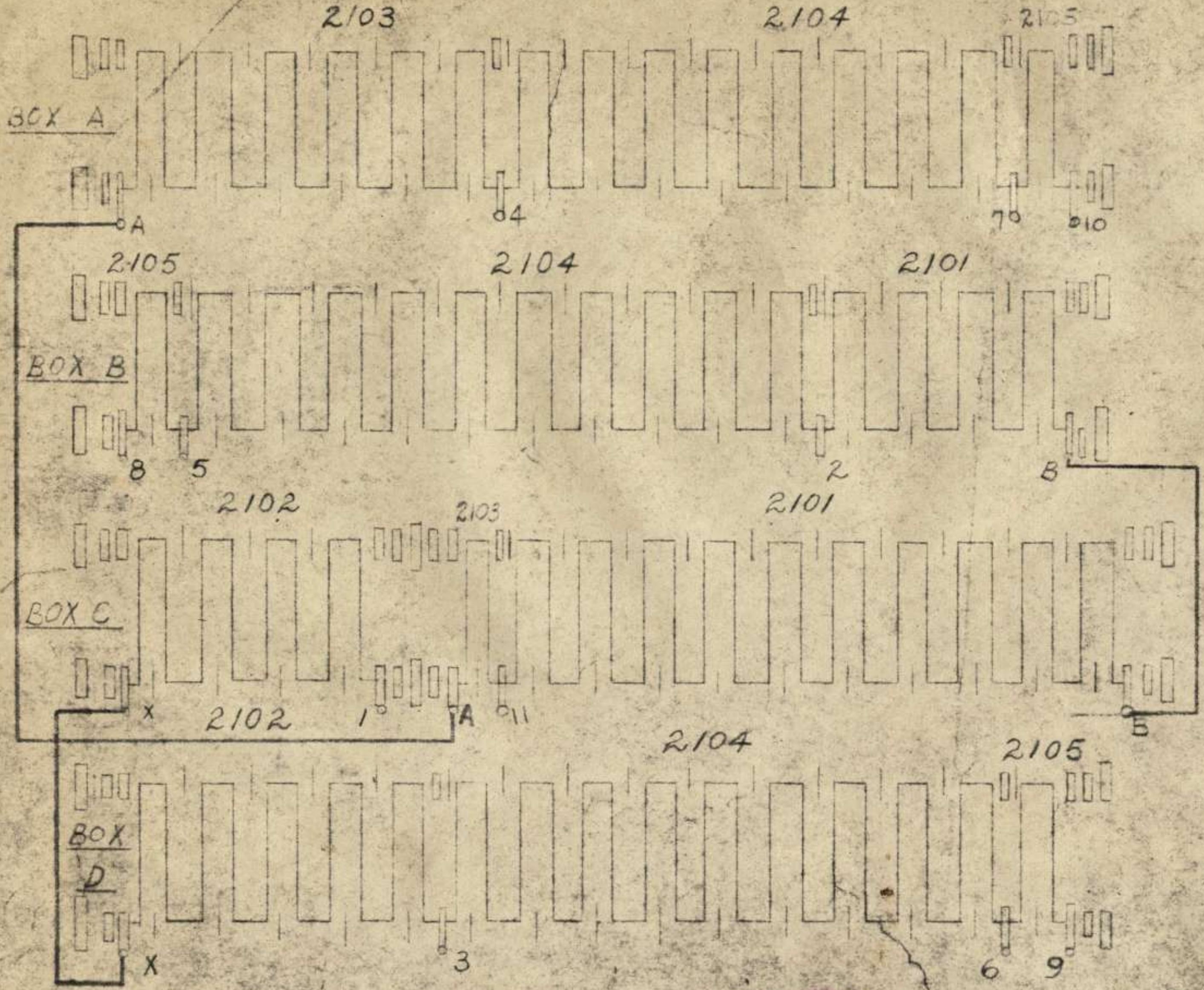
DR. BY M.H.T.
CH. BY [illegible]
APP BY
APP. FOR STD.

HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

DATE: 5/29/37

52582 RES

NO. REQ	P#	NAME OF PART
6	2105	GRIDS
54	2104	GRIDS
14	2103	GRIDS
18	2102	GRIDS
28	2101	GRIDS
9	4 K48295	TERMINAL
125	917	MICA WASHERS
9	918	STEEL WASHERS
4	TABLE B	FRAME (LARGE)



STEP	OHMS RES
11-2	4.760
1-3	1.340
11-4	1.134
2-5	1,120
3-6	1.008
4-7	.896
5-8	.086
6-9	.086
7-10	.086

CR-12362-3

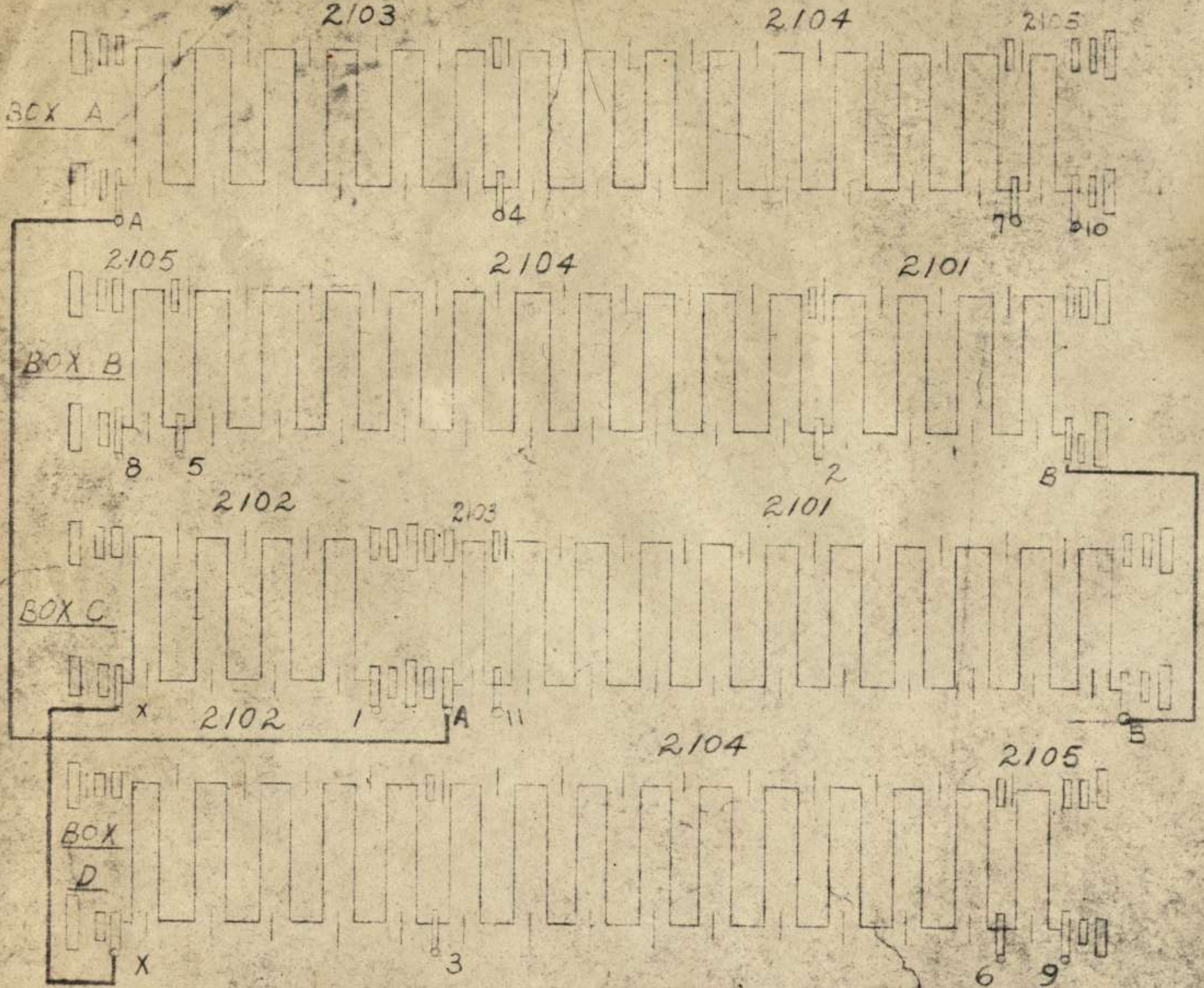
52582 G4 GRID RESISTANCE

DR. BY M.H.T.
CH. BY
APP. BY
APP. FOR STD.

HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

DATE: 5/29/37

52582 RES.



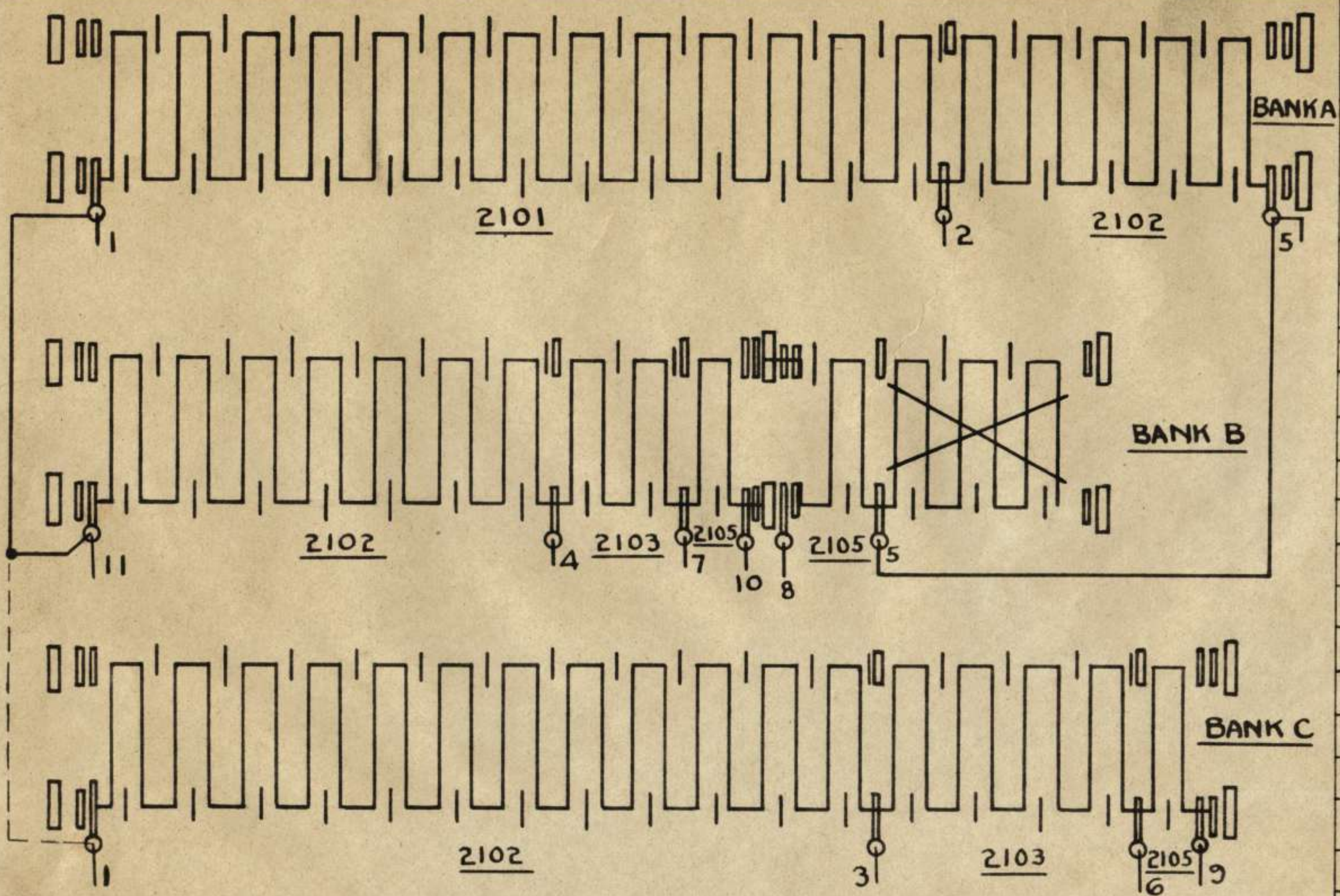
NO. REQ	P#	NAME OF PART
6	2105	GRIDS
54	2104	GRIDS
14	2103	GRIDS
18	2102	GRIDS
28	2101	GRIDS
9	K48295	TERMINAL
125	917	MICA WASHERS
9	918	STEEL WASHERS
4	TABLE H	FRAME (LARGE)

STEP	OHMS RES
11-2	4.760
1-3	1.340
11-4	1.134
2-5	1.120
3-6	1.008
4-7	.896
5-8	.086
6-9	.086
7-10	.086

CR-12362-3

52682 G4 GRID RESISTANCE

DR. BY M.H.T.	HARNISCHFEGER CORPORATION ELECTRICAL DEPARTMENT
CH. BY	DATE: 5/29/37
APP. BY	52582 RES.
APP. FOR STD.	



EXTRA FOR DYN.BR. LIM.SW.	NO. REQ.	P. #	NAME OF PART
	26 48	2101 2102	GRID
	12	2103	GRID
	6	2105	GRID
			GRID
	10	22/2130	TERMINAL 2101 SINGLE WIRE 2105
		22/2131	TERMINAL 2106 SINGLE WIRE 2110
	3	22/2133	TERMINAL 2101 DOUBLE WIRE 2105
		22/2132	TERMINAL 2106 DOUBLE WIRE 2110
	90	917	MICA WASHER $1\frac{3}{4}''$
		909	MICA WASHER $2\frac{1}{8}''$
	14	1185	EBONY ASB. WASHER $1\frac{7}{8}''$
	12	946	FIBER WASHER $1\frac{3}{4}''$
	30	918	STEEL WASHER $1\frac{1}{2}''$
	12		$\frac{5}{8}''$ PUNCHED WASHER
	12		$\frac{5}{8}''$ LOCK WASHER
	6	943	MICA TUBE
	6	944	$\frac{5}{8}''$ ROD
	12		$\frac{5}{8}''$ NUT
	3	945	$\frac{1}{2}''$ ROD
	6		$\frac{1}{2}''$ NUT
		1214	STEEL WASHER
		1194	TERMINAL

CONNECT 1&11 AS SHOWN IN BROKEN LINES ONLY WHEN CONTROLLER DIAGRAM REQUIRES THIS CONNECTION

STEP	RES
9-6	.086
6-3	.648
3-1	3.07
10-7	.086
7-4	.324
4-11	1.79
11-2	4.42
2-5	1.28
5-8	.086

CR-12362-3

20 H.P. - 169 V - 61 A - 290 VT.

42523-G3-GRID RESISTANCE
R4-5-6 CONTROLLER

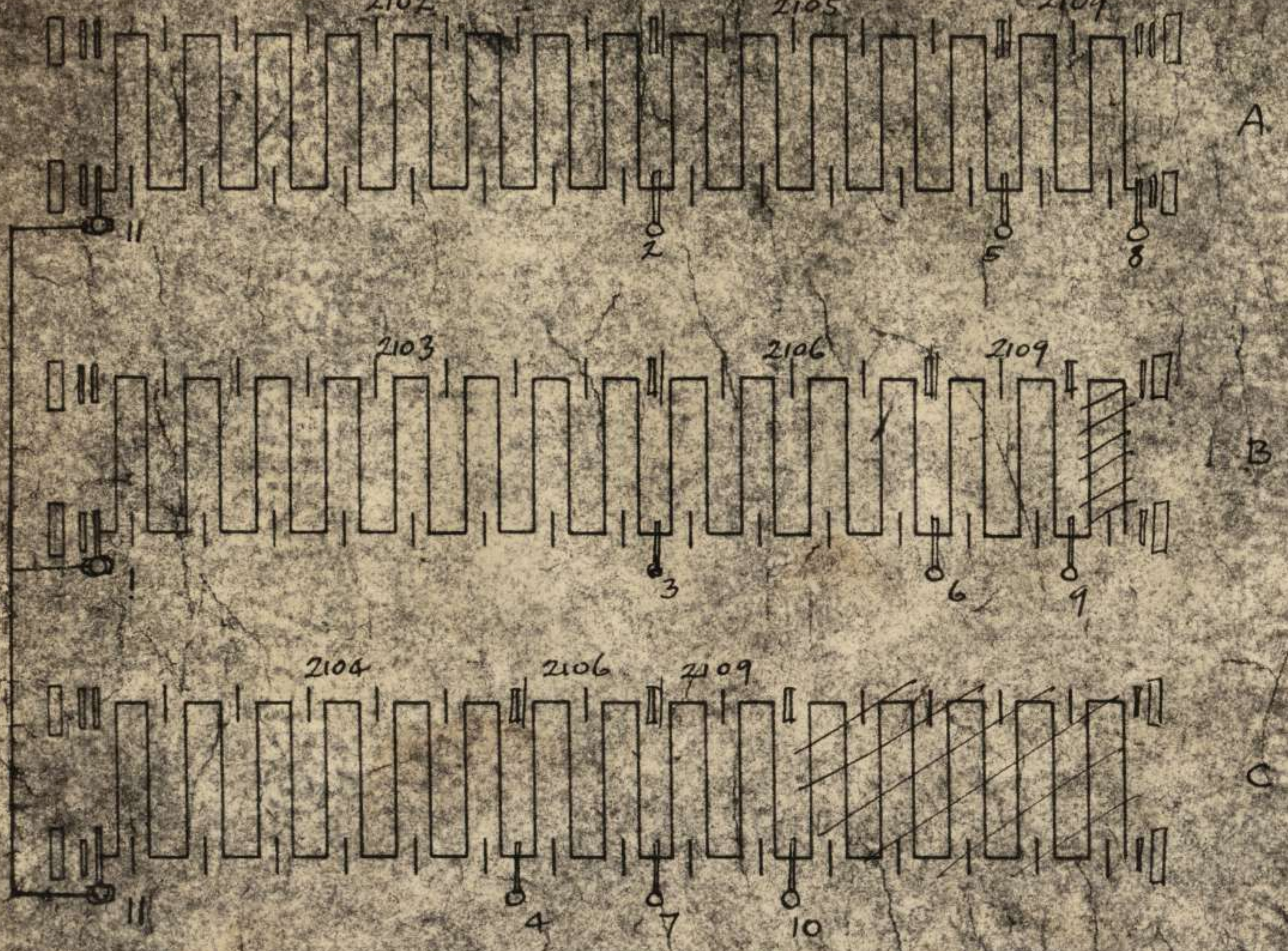
DR. BY D.M.R. 12-29-43
CH. BY
APP. BY J.M.
APP. FOR STD.

HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

DATE

42523 RES.

MILWAUKEE



EXTRA FOR DYN. BR. LIN	NO. REQ	P	NAME OF PART	
	16 16	2102 2103	GRIDS	
	12 10	2104 2105	GRIDS	
	12 12	2106 2109	GRIDS	
			GRIDS	
	3	22/2130	TERMINALS SINGLE WIRE	{210 210
	6	22/2131	"	{210 211
	3	22/2133	TERMINALS DOUBLE WIRE	{2101 2105
	–	22/2132	"	{2106 211
	60	917	MICA WASHER	1 3/
	30	909	" "	2 1/8
	12	1185	EBONY ASB. "	1 5/
	12	946	FIBER "	1 1/4
	30	918	STEEL "	1 1/2
	12		5/8" PUNCHED WASH	
	12		5/8" LOCK "	
	6	943	MICA TUBE	
	6	944	5/8" ROD	
	12		5/8" NUTS	
	3	945	1/2" ROD	
	12		1/2" NUTS	
		1214	STEEL WASHER	
		1194	TERMINAL	

CONNECT 1&11 AS SHOWN IN BROKEN LINES
ONLY WHEN CONTROLLER DIAGRAM REQUIRES
THIS CONNECTION

LIST 42732 & LIST 42823

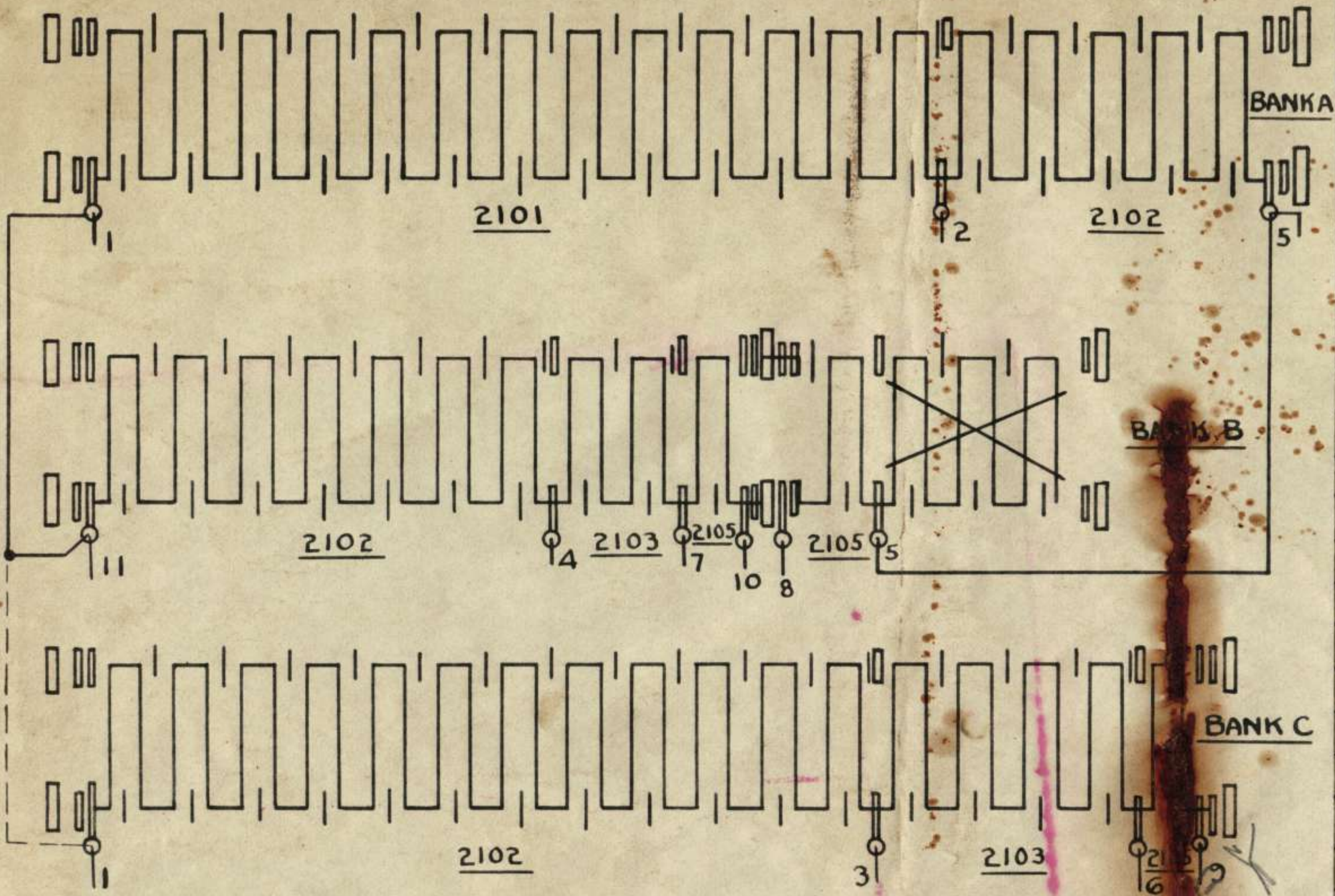
42732 G3 GRID RESISTANCE
R4-5-6-42732 CONTROLLER

CR-1 -3

25196

42732

10



TROLLEY

EXTRA FOR DYN BR LIMSW	NO. REQ.	P#	NAME OF PART
	26 48	2101 2102	GRID
	12	2103	GRID
	6	2105	GRID
			GRID
	10	22/2130	TERMINAL SINGLE WIRE {2101 2105
		22/2131	TERMINAL SINGLE WIRE {2106 2110
	3	22/2133	TERMINAL DOUBLE WIRE {2101 2105
		22/2132	TERMINAL DOUBLE WIRE {2106 2110
	90	917	MICA WASHER 1 3/4"
		909	MICA WASHER 2 1/8"
	14	1185	EBONY ASB. WASHER 1 7/8"
	12	946	FIBER WASHER 1
	30	918	STEEL WASHER 1
	12		5/8" PUNCHED WASHER
	12		5/8" LOCK WASH
	6	943	MICA TUBE
	6	944	5/8" ROD
	12		5/8" NUT
	3	945	1/2" ROD
	6		1/2" NUT
		1214	STEEL WASHER
		1194	TERMINAL

CONNECT 1 & 11 AS SHOWN IN BROKEN LINES ONLY WHEN CONTROLLER DIAGRAM REQUIRES THIS CONNECTION

STEP	9-6	6-3	3-1	10-7	7-4	4-11	11-2	2-5	5-8	
RES	.086	.648	3.07	.086	.324	1.79	4.42	1.28	.086	

12562-3

20 H.P. - 169 V - 61 A - 290 V T.

DR. BY D.M.R. 12-29-43

APP. BY J.M.

DATE

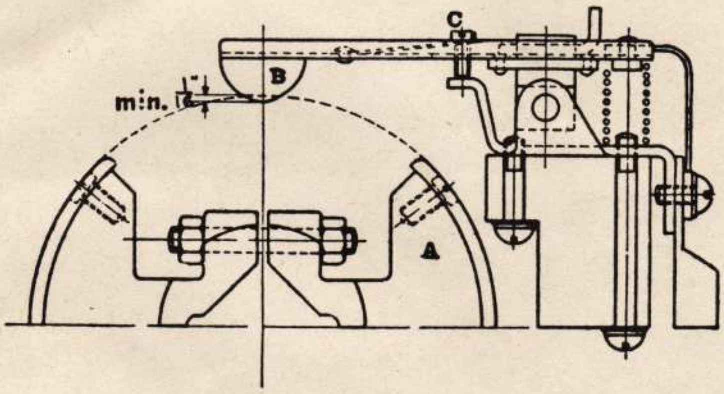
42523-G3-GRID RESISTANCE
R4-5-6 CONTROLLER

HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

42523 RES.

Care and Maintenance of P & H Drum Controllers

In order to obtain satisfactory operation of the controller it is necessary to keep the fingers correctly adjusted. This is accomplished by means of the square head set screw "C", which should be adjusted so that the drum "A" upon engaging the fingers will lift the finger tip "B" about 1/16-in. as shown in cut. If the fingers are set too deep, they are very apt to stick. As the finger tips "B" wear, they will cease to make contact with the segments "A" and very destructive arcing will result, unless the fingers are readjusted. VASELINE should be used for the lubrication of the contacts. *Oil or grease should not be used on the contacts as they will carbonize and produce unclean surfaces.*



In order to obtain satisfactory operation and avoid delays, we recommend a systematic inspection of the controller fingers at regular intervals, at which time every finger should be readjusted and the contacts should be cleaned and lubricated. If the contacts show burns, they should be smoothed with a piece of emery cloth.

If the controllers are given good care, the fingers and contacts will last a long time before they will require renewal; if, however, the controller is neglected, severe arcing will occur and the fingers and contact segments will deteriorate rapidly.

CONTROLLER SEGMENTS

We have changed the thickness of the drum segments of the type "R" and "S" controllers from 3/16" to 1/4".

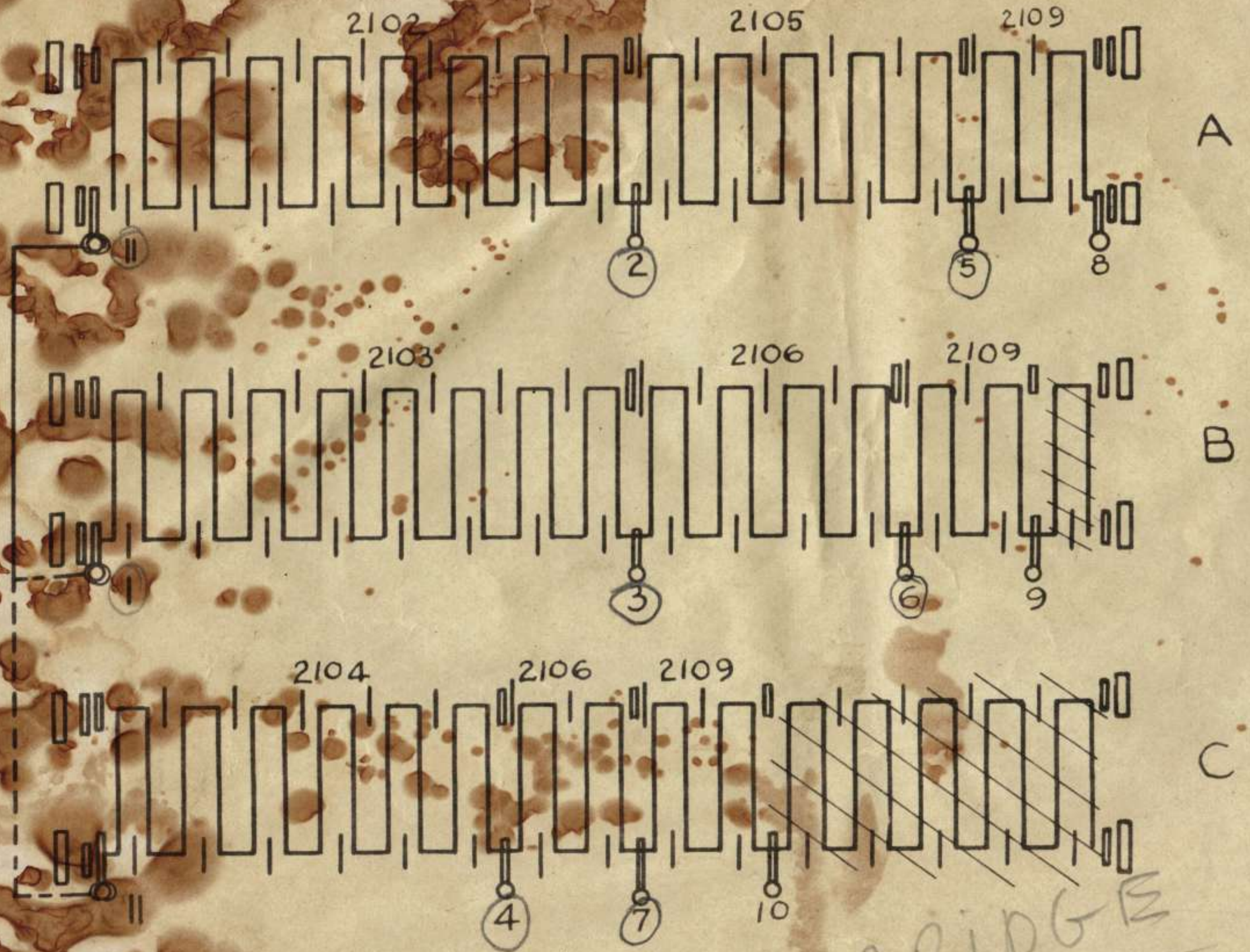
This change was made in order to provide for more wear of the segments and thereby give them longer life.

The 1/4" segments are interchangeable with the old 3/16" segments and can be fastened to the drum with the same screws. However, when changing a segment on one side of the drum, the corresponding segment on the other side must also be changed, so that the finger will make good contact with both sides of the drum.

The piece number is stamped on the segment. When ordering, specify this number.

HARNISCHFEGER CORPORATION

MILWAUKEE, WISCONSIN



EXTRA FOR DYN.BR.LIN.SW.	NO. REQ.	P	NAME OF PART
	16 16	2102 2103	GRID
	12 10	2104 2105	GRID
	12 12	2106 2109	GRID
	12		TERMINAL PC4-K48295
	60	917	MICA WASHER $1\frac{3}{4}$"
	30	909	MICA WASHER $2\frac{1}{8}$"
	12	918	STEEL WASHER $1\frac{1}{2}$"

BRIDGE

CR-12362-3

CONNECT I&II AS SHOWN IN BROKEN LINES ONLY WHEN CONTROLLER DIAGRAM REQUIRES THIS CONNECTION

LIST 42732 & LIST 42828
42732 G3

25196-C

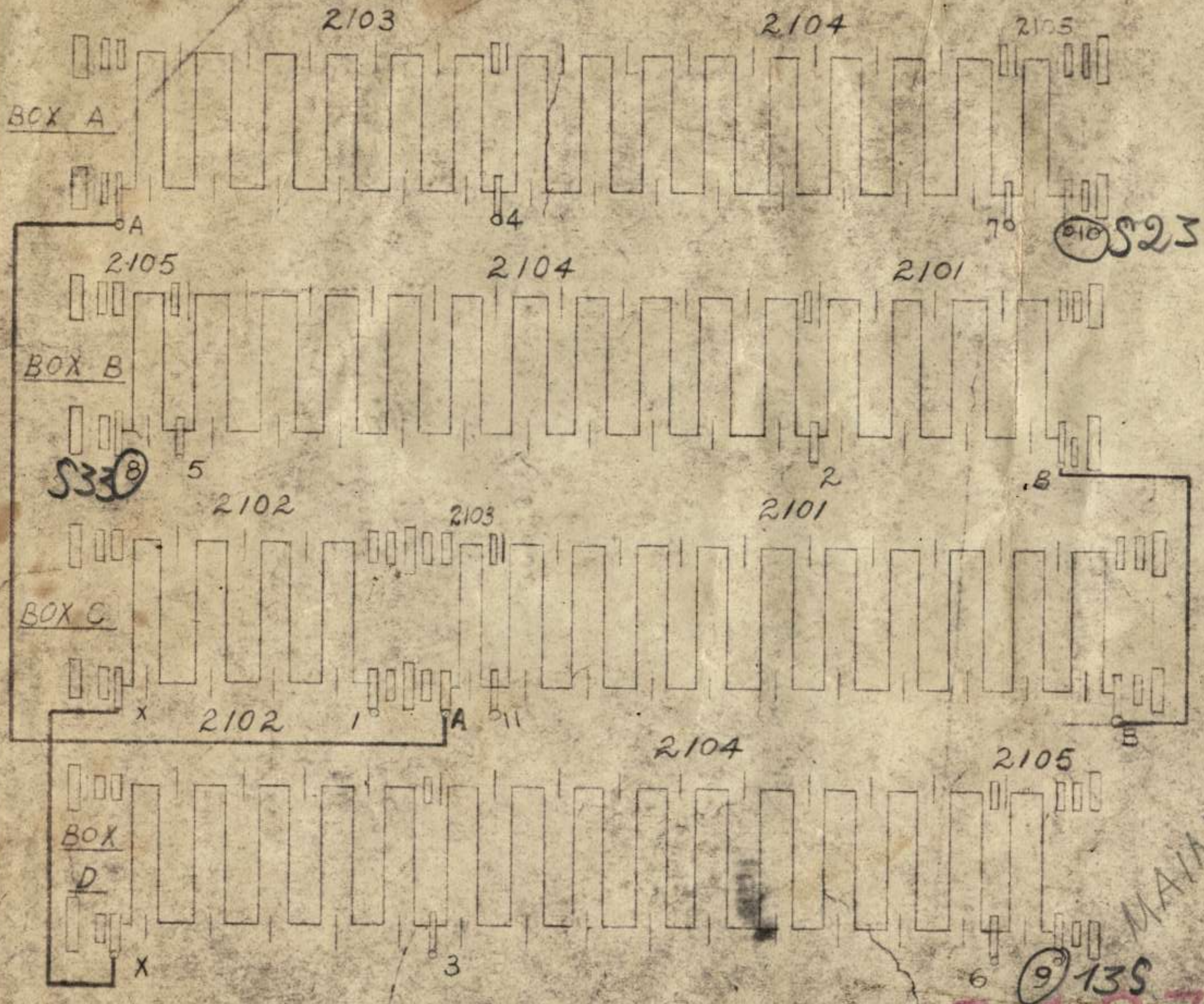
GRID RESISTANCE
R4-5-6-42732 CONTROLLER

J.M.

HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

TR. D.T.
DATE 3-22-44

42732 RES



NO. REQ	P#	NAME OF PART
6	2105	GRIDS 0,043 Ω
54	2104	GRIDS 0,056 Ω
14	2103	GRIDS 0,081 Ω
18	2102	GRIDS 0,128 Ω
28	2101	GRIDS 0,17 Ω
9	4 KA8295	TERMINAL
125	917	MICA WASHERS
9	918	STEEL WASHERS
4	TABLE H	FRAME (LARGE)

STEP	OHMS RES
11-2	4.760
1-3	1.340
11-4	1.134
2-5	1.120
3-6	1.008
4-7	.896
5-8	.086
6-9	.086
7-10	.086

MAIN HOIST

GR-12362-3

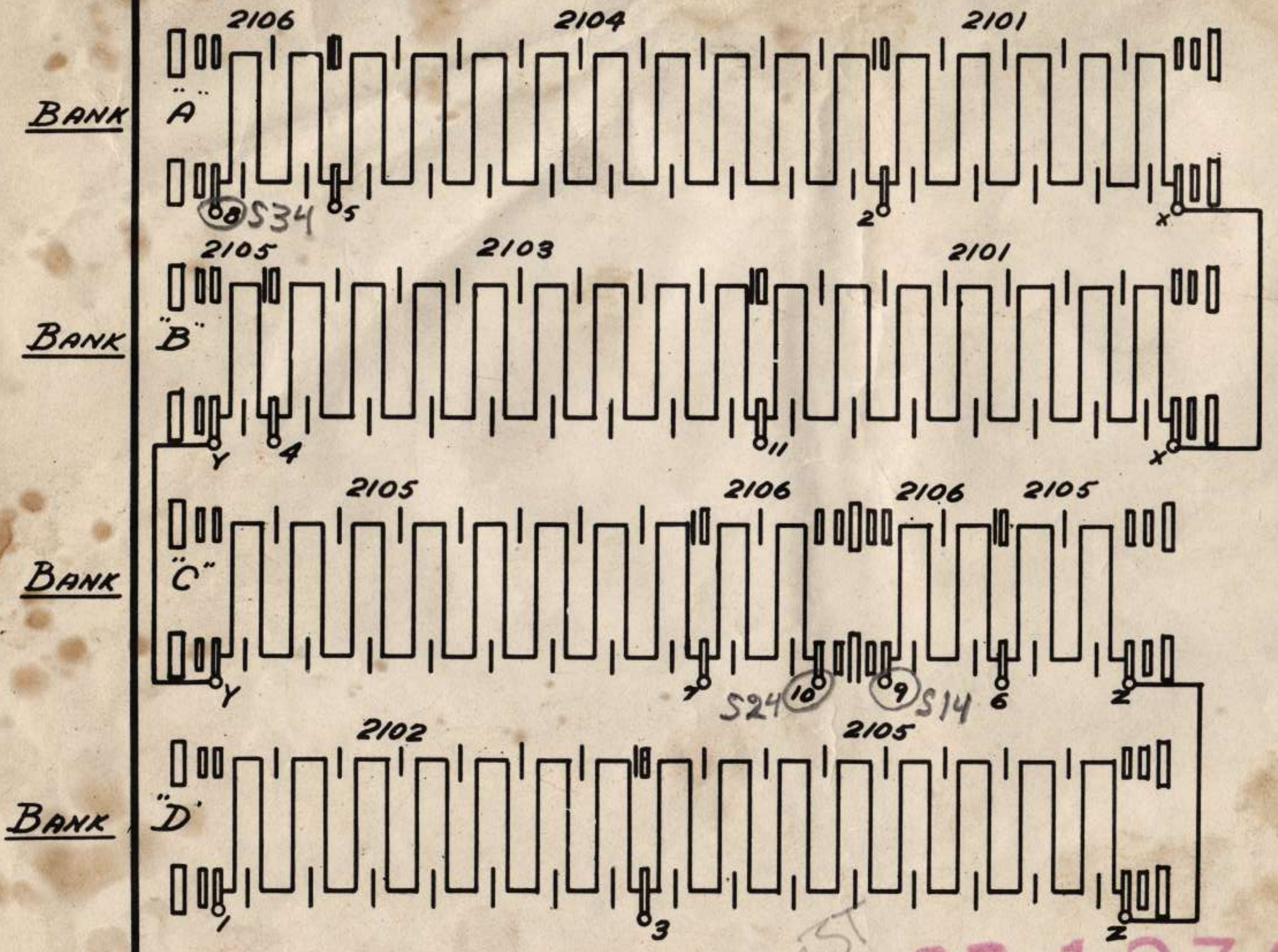
52582 G4 GRID RESISTANCE

DR. BY M.H.T.
CH. BY
APP. BY
APP. FOR STD.

HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

DATE: 5/29/37

52582 RES.



No. Req.	Pc. No.	Name Of Part
4	1-K48499	Frame (Large)
	1-K48500	Frame (Small)
24	2101	Grids
14	2102	"
16	2103	"
18	2104	"
38	2105	"
12	2106	"
17	4-K48295	Terminal
70	917	1¾" Mica Washer
50	909	2⅝" " "
2	1185	Molded Wr. Plain
	1-S-3776	" "At Ends
	5-K48295	Fiber Washer
21	918	1½"x⅛" St. Washer
	7-K48295)	⅝" Rod 22⅝" Lg.
		⅝" P. Washer
		⅝" Lock "
		⅝" Nut
	1-K48295	Mica Tube 20" Lg.
	14-K48295	½" Rod 21½" Lg.
		½" Nut

AUX HOIST

CR-12362-3

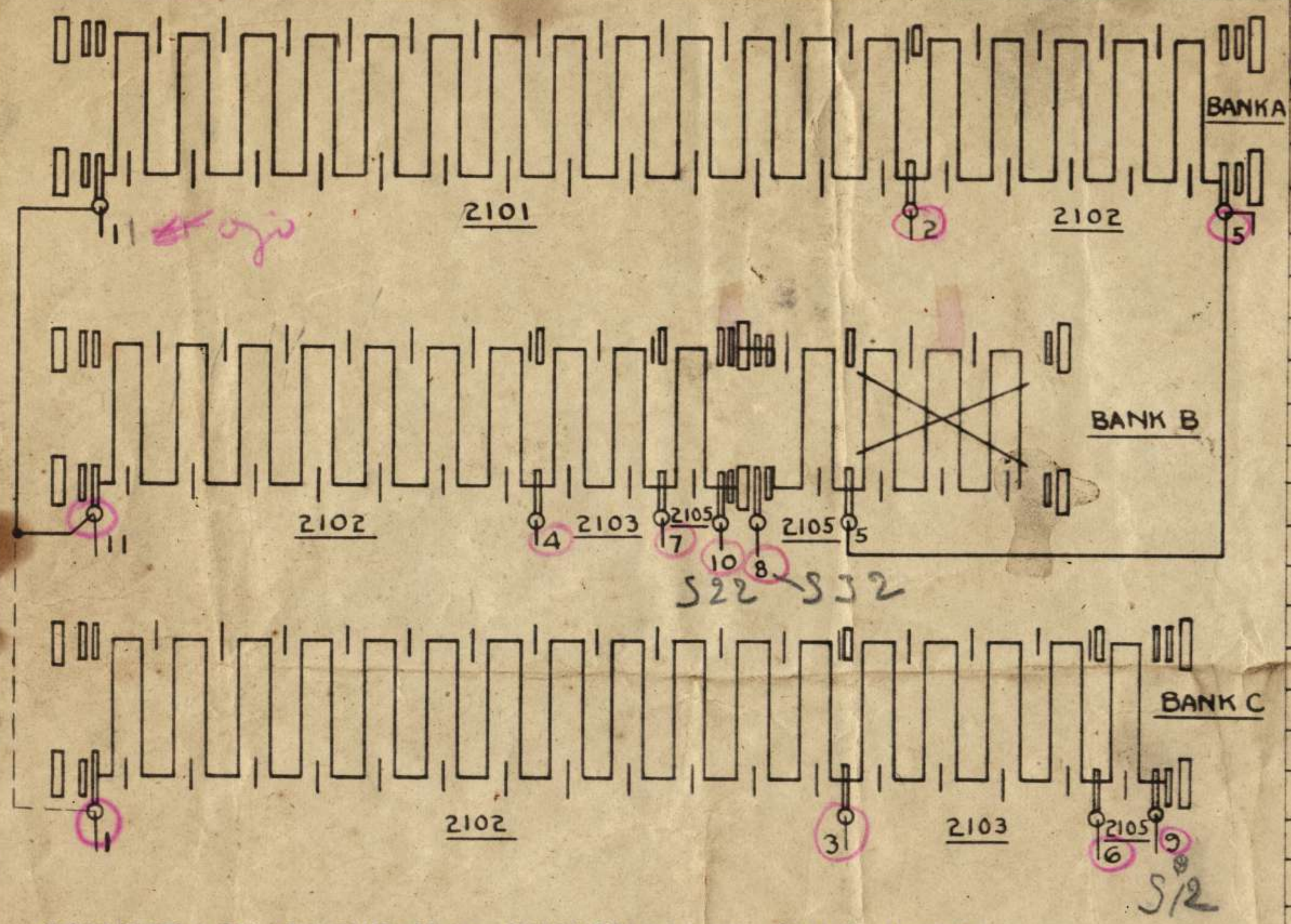
52398 G4 GRID RESISTANCE
R-101 CONTROLLER

RE. DR. BY E.M.J.
CH. BY J.M.C.
APP. BY
APP. FOR PRD.

HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

DATE 12-16-41

52398 RES.



EXTRA FOR DYN BR LIMSW	NO. REQ.	P#	NAME OF PART
	26 48	2101 2102	GRID
	12	2103	GRID
	6	2105	GRID
			GRID
	10	22/2130	TERMINAL SINGLE WIRE {2101 2105
		22/2131	TERMINAL SINGLE WIRE {2106 2110
	3	22/2133	TERMINAL DOUBLE WIRE {2101 2105
		22/2132	TERMINAL DOUBLE WIRE {2106 2110
	90	917	MICA WASHER $1\frac{3}{4}''$
		909	MICA WASHER $2\frac{1}{8}''$
	14	1185	EBONY ASB. WASHER $1\frac{7}{8}''$
	12	946	FIBER WASHER $1\frac{3}{4}''$
	30	918	STEEL WASHER $1\frac{1}{2}''$
	12		$\frac{5}{8}''$ PUNCHED WASHER
	12		$\frac{5}{8}''$ LOCK WASHER
	6	943	MICA TUBE
	6	944	$\frac{5}{8}''$ ROD
	12		$\frac{5}{8}''$ NUT
	3	945	$\frac{1}{2}''$ ROD
	6		$\frac{1}{2}''$ NUT
		1214	STEEL WASHER
		1194	TERMINAL

CONNECT 1&11 AS SHOWN IN BROKEN LINES ONLY WHEN CONTROLLER DIAGRAM REQUIRES THIS CONNECTION

RES	.086	.648	3.07	.086	.324	1.79	4.42	1.28	.086		
STEP	9-6	6-3	3-1	10-7	7-4	4-11	11-2	2-5	5-8		

CR-12362-3

TROLLEX

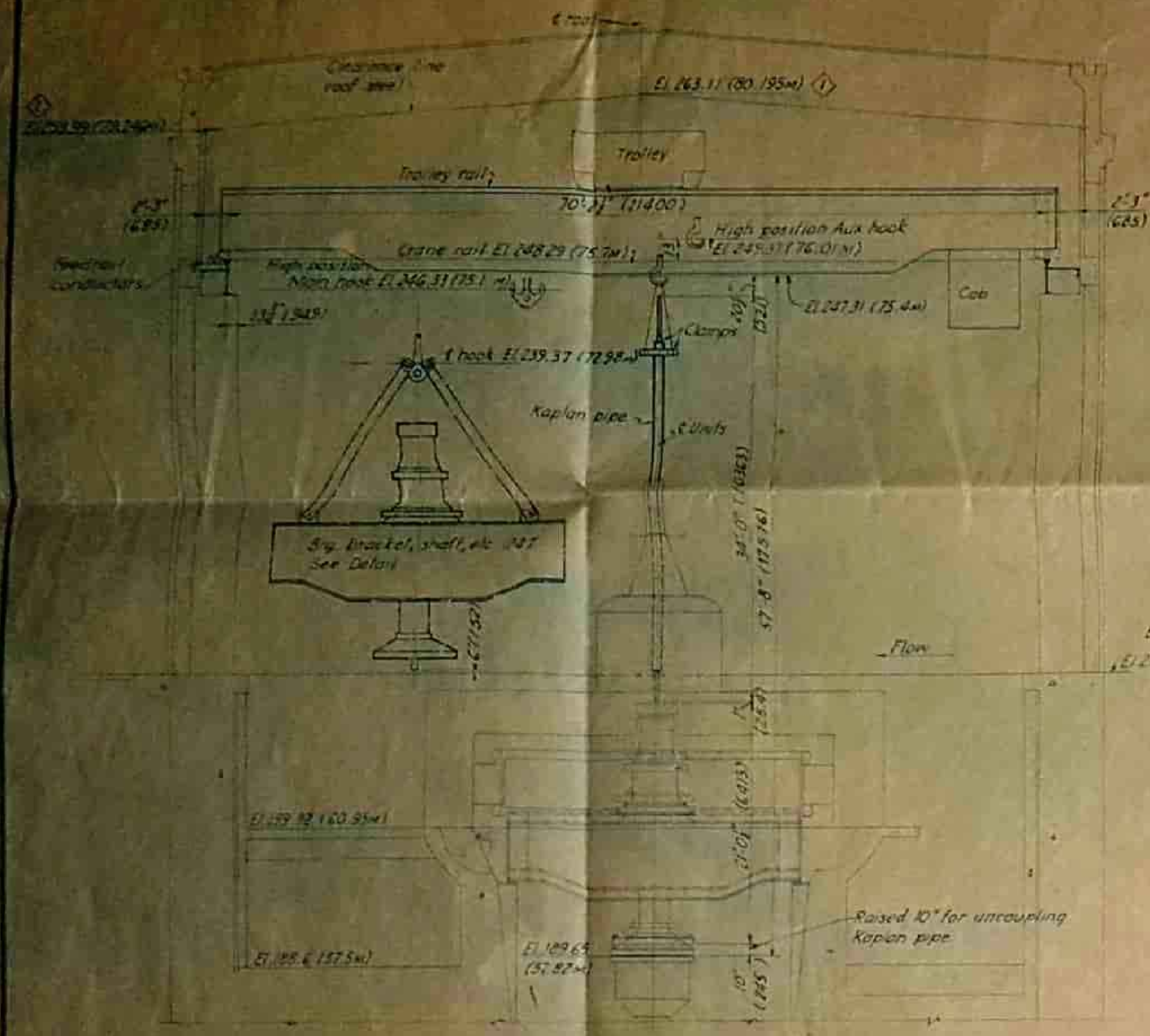
20 H.P. - 169 V - 61 A - 290 VT

42523-G3-GRID RESISTANCE
R4-5-6 CONTROLLER

DR. BY D.M.R. 12-29-43
CH. BY
APP. BY J.M.
APP. FOR STD.
DATE

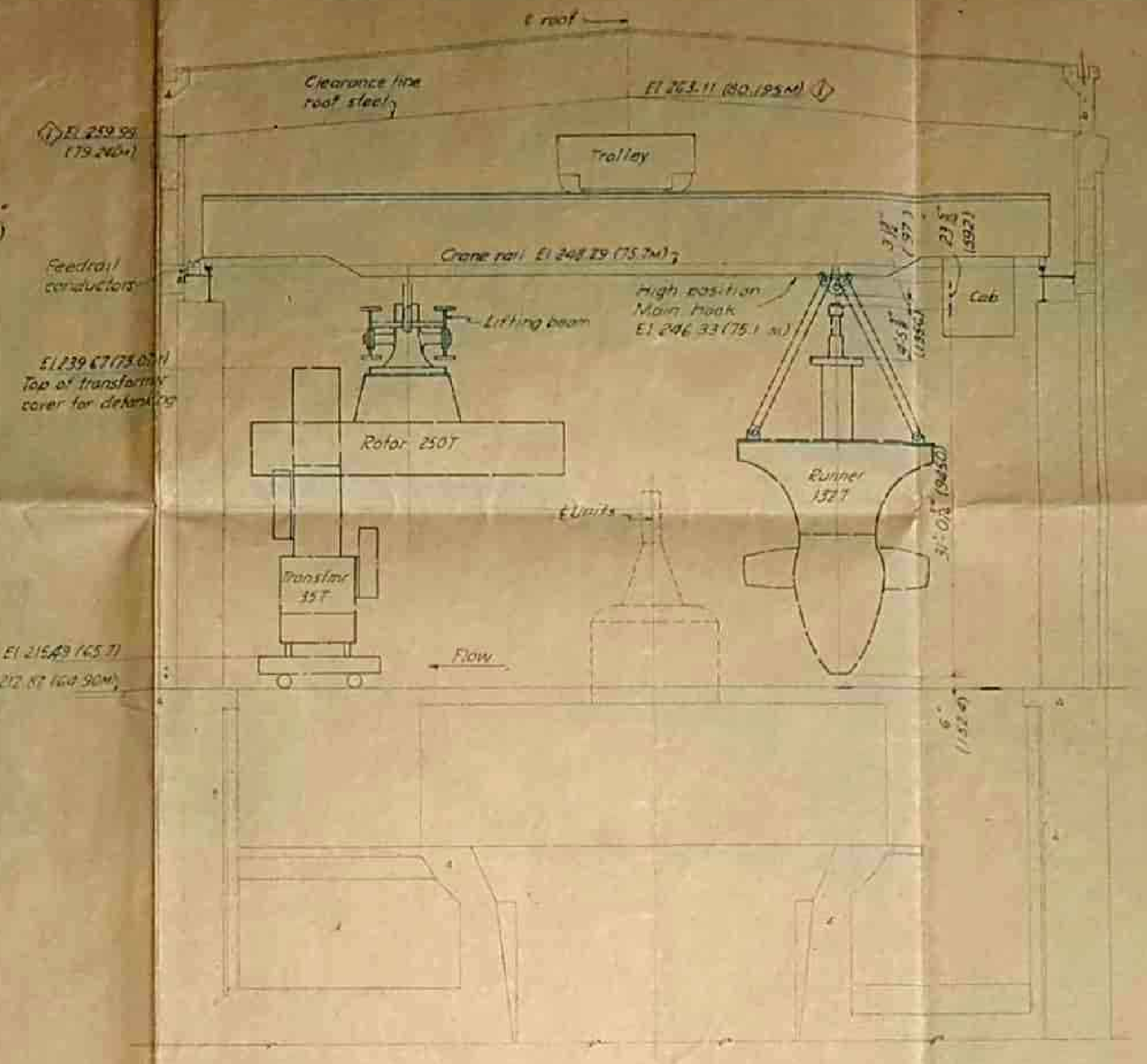
HARNISCHFEGER CORPORATION
ELECTRICAL DEPARTMENT

42523 RES.



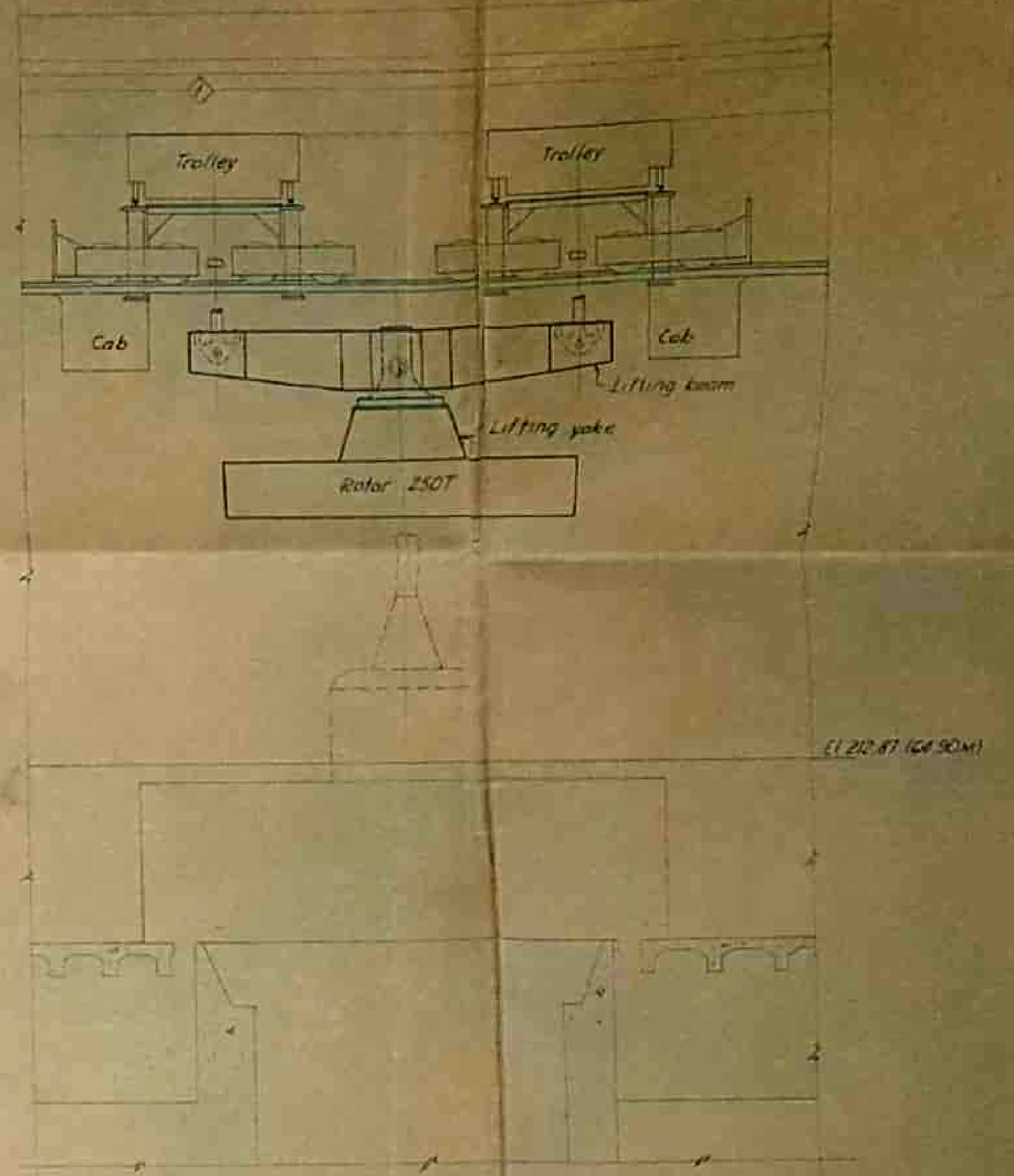
LOWER BEARING BRACKET & KAPLAN PIPE HANDLING

Scale 0 8 Feet



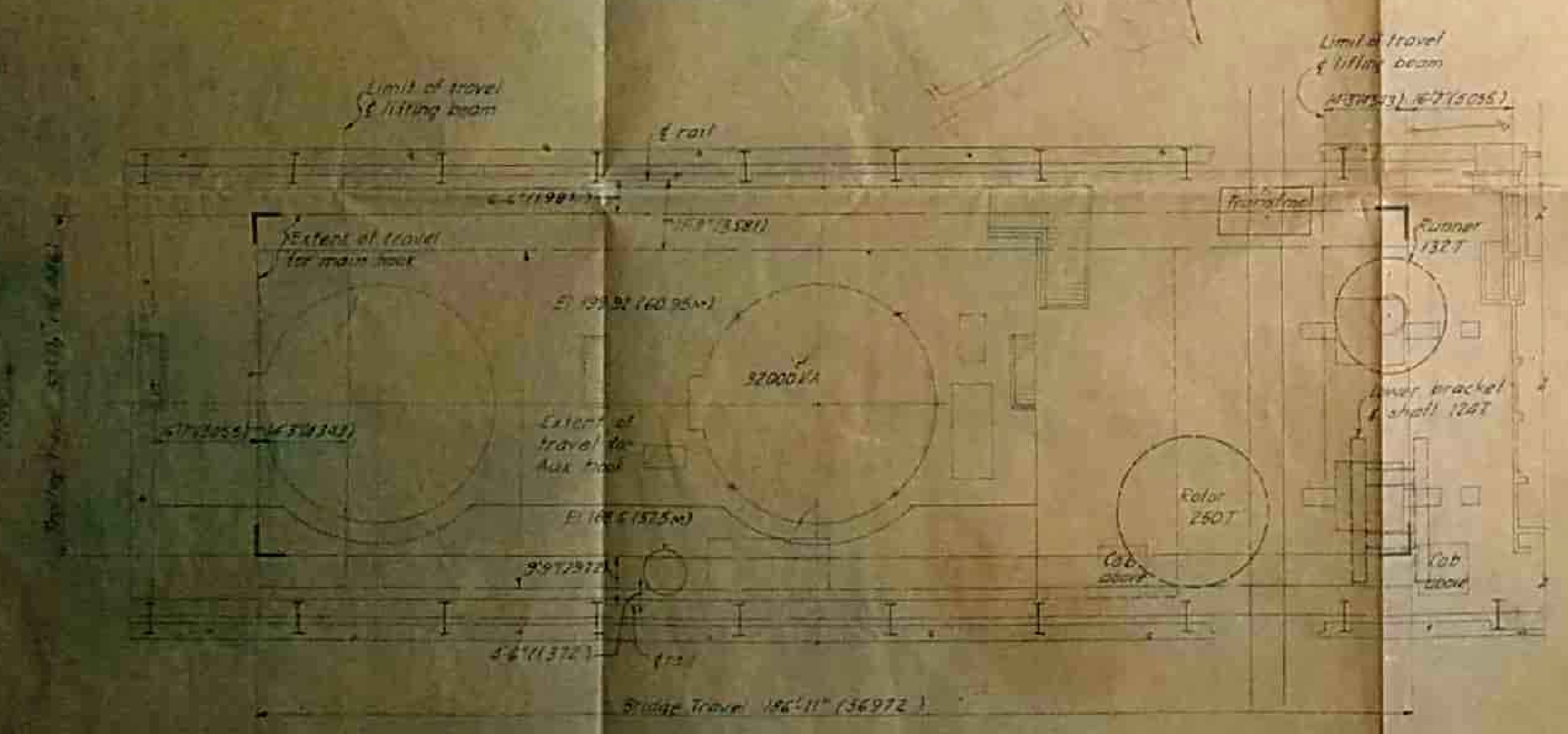
ROTOR & RUNNER HANDLING

Scale 0 8 Feet



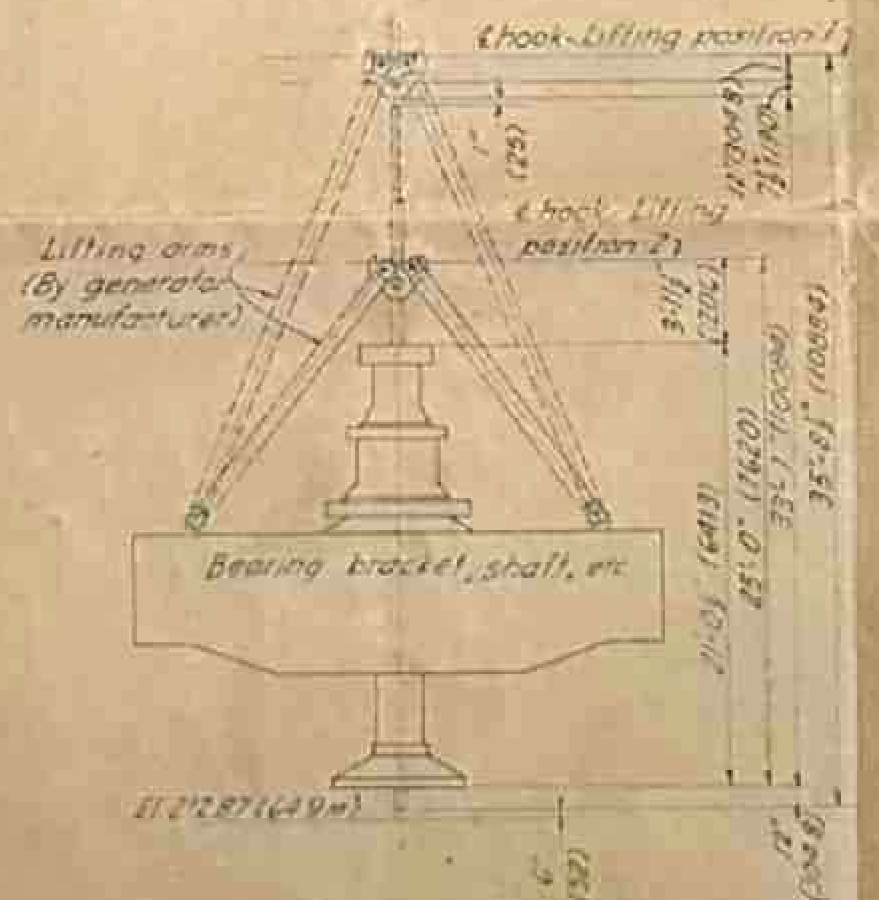
LONGITUDINAL POSITION OF ROTOR

Scale 0 8 Feet


Limit of travel lifting beam
Limit of travel lifting beam
rail
Extent of travel for main hook
El 199.92 (60.95m)
92000 kVA
Extent of travel for Aux hook
El 188.6 (57.5m)
Transfer
Runner 132T
Lower bracket & shaft 124T
Rotor 250T
Cab
Cab
Bridge Travel 186'-11" (56972)

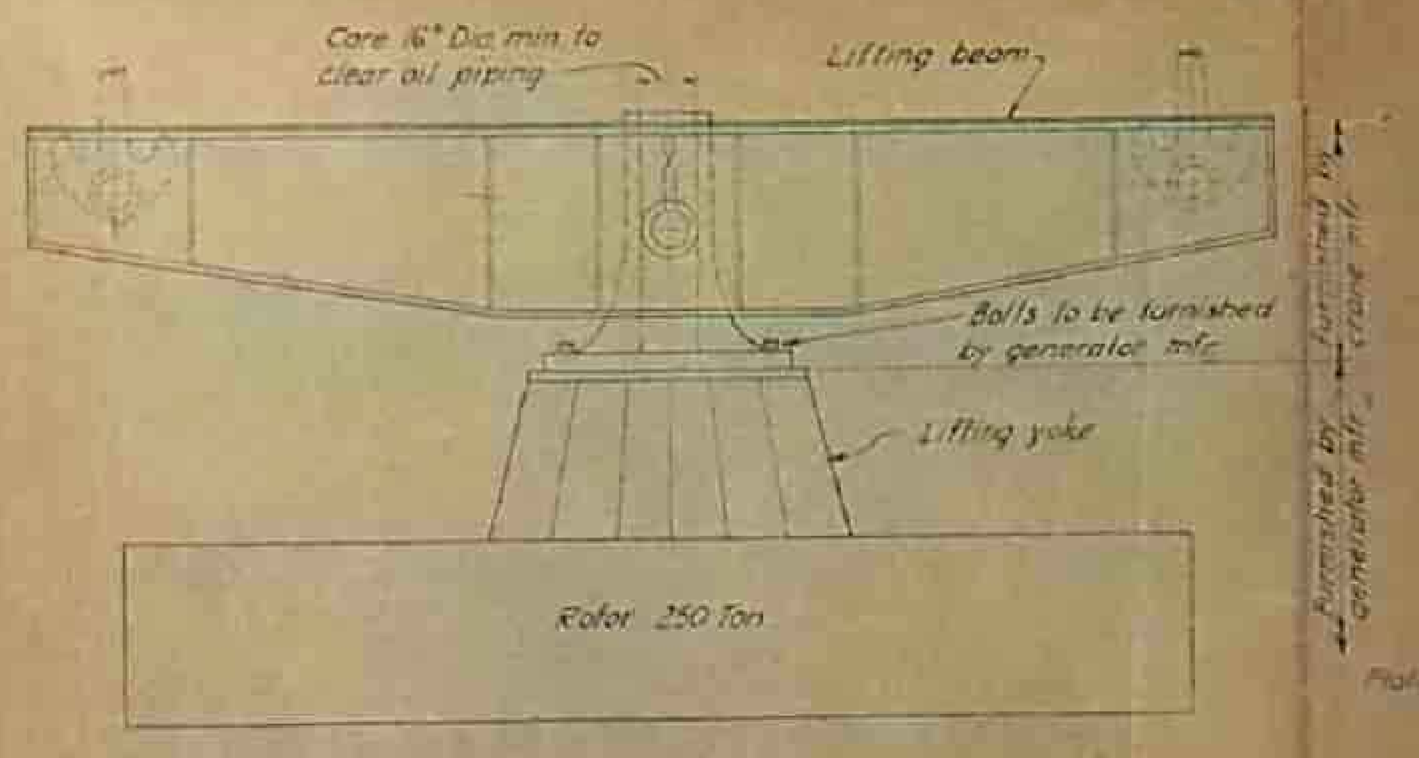
PLAN OF GENERATOR ROOM & ERECTION BAY

Scale 1:200


hook-Lifting position 1
hook Lifting position 2
Lifting arms (By generator manufacturer)
Bearing bracket, shaft, etc
El 212.87 (64.9m)

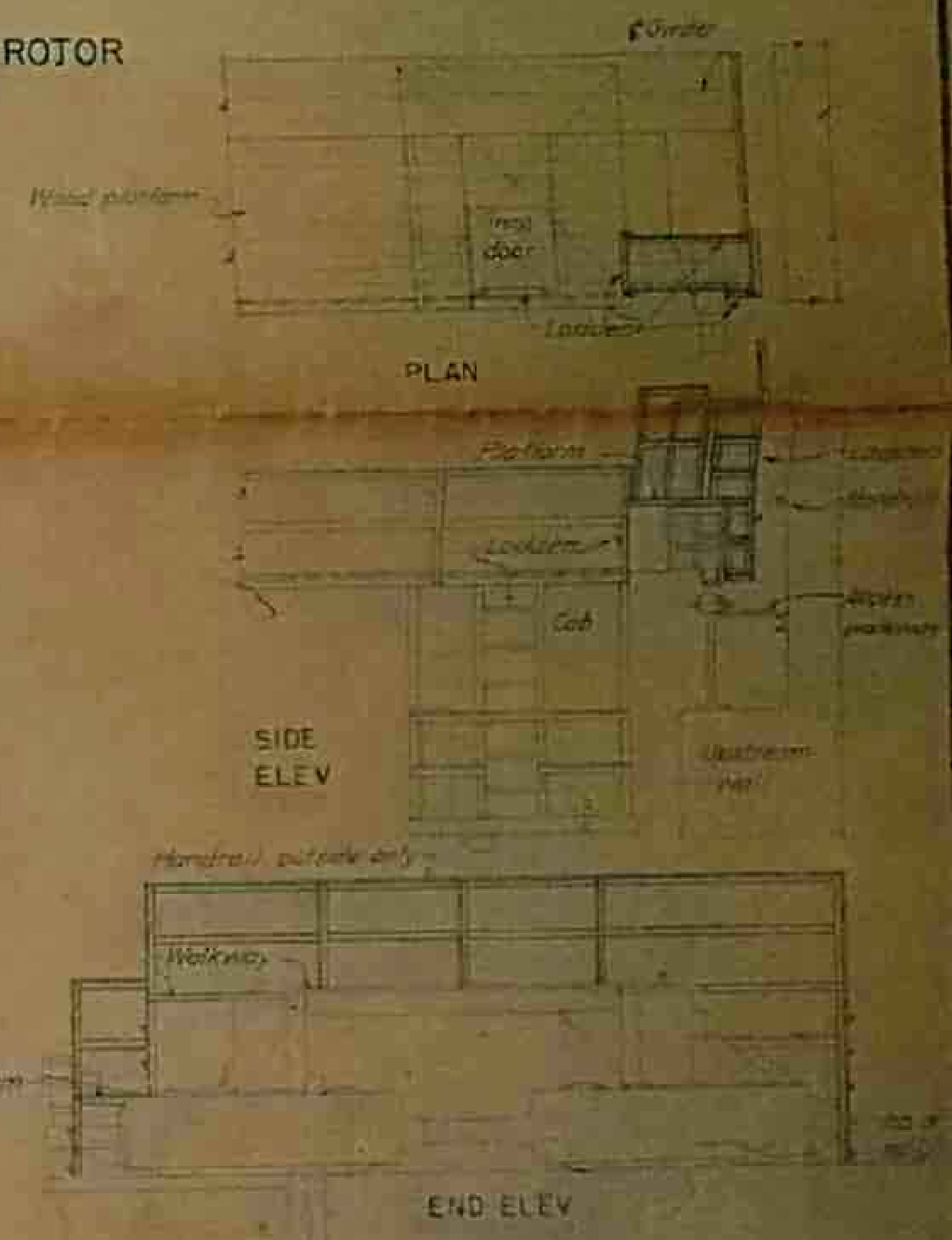
BEARING BRACKET LIFTING DEVICE

Scale 0 8 Feet


Core 16" Dia min to clear oil piping
Lifting beam
2¼ drill 16 holes equally spaced
Bolts to be furnished by generator mfr.
Lifting yoke
Rotor 250 Ton

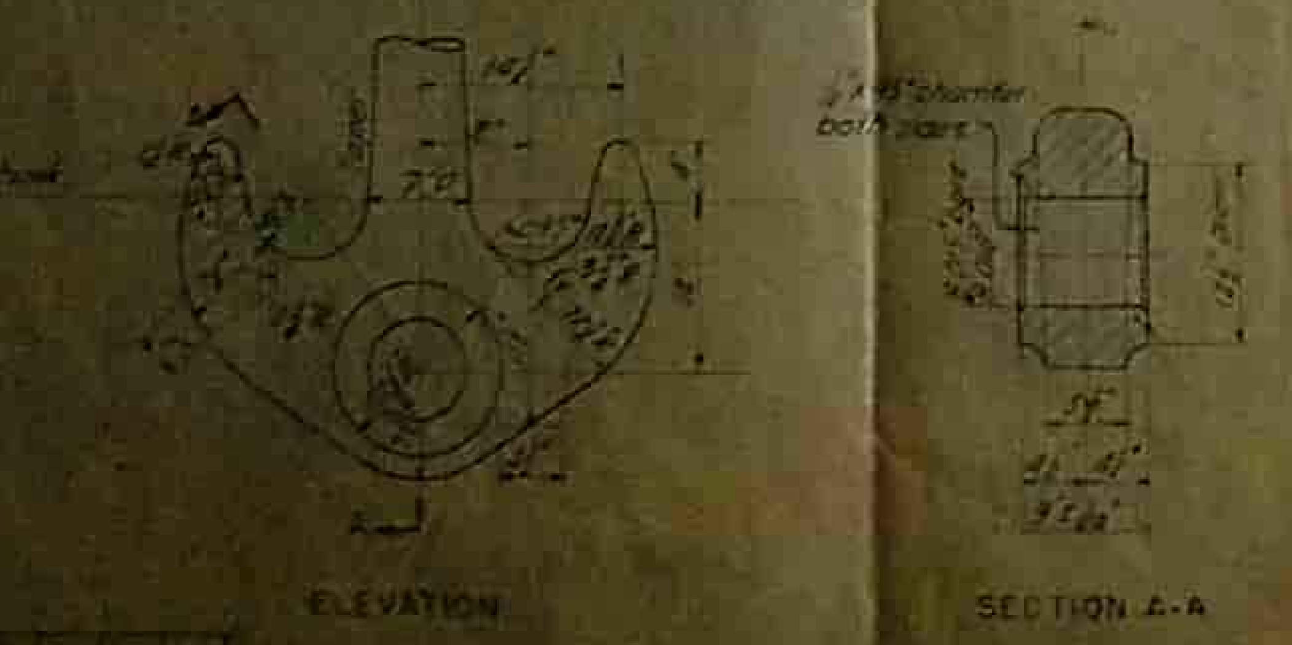
ROTOR LIFTING DEVICE

Scale 0 4 Feet



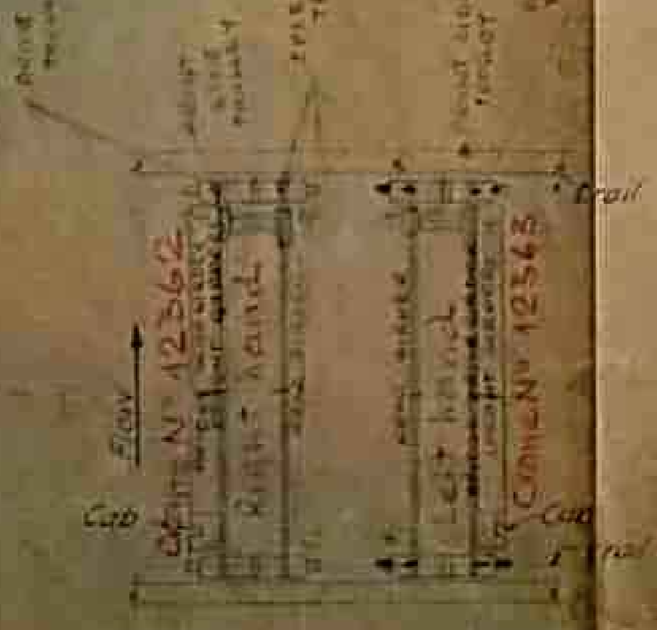
ACCESS TO CAB

Scale 0 4 Feet



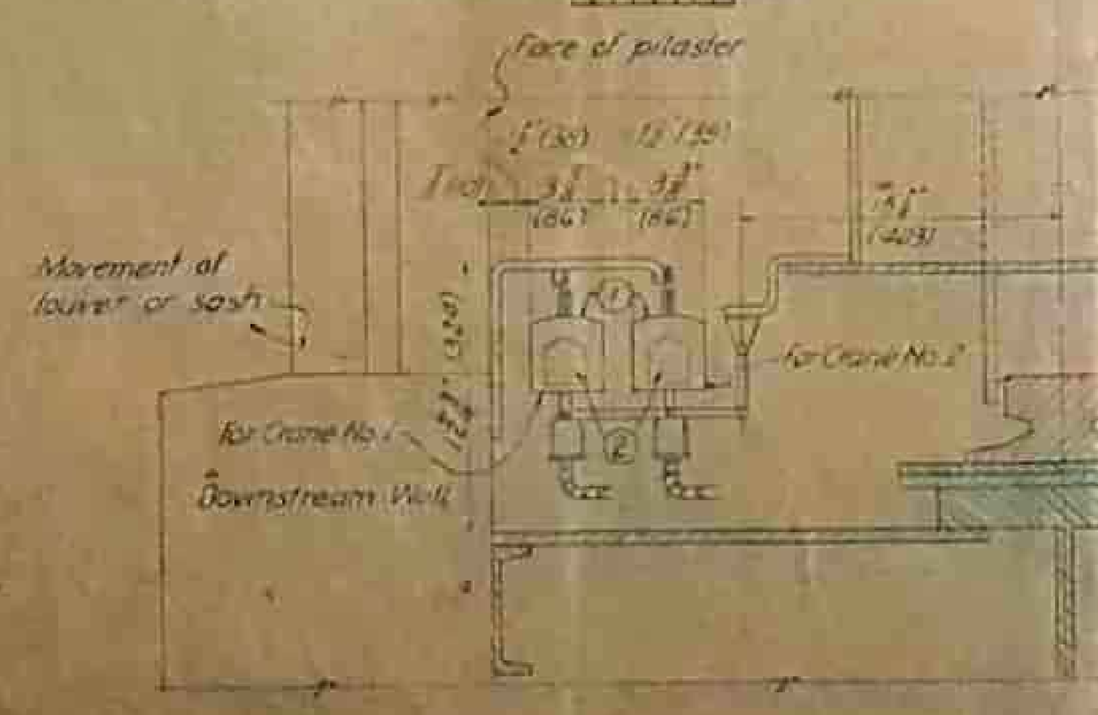
SISTER HOOK

Scale 0 1 Foot



CRANE CAB LOCATION

Scale 0 5 Feet

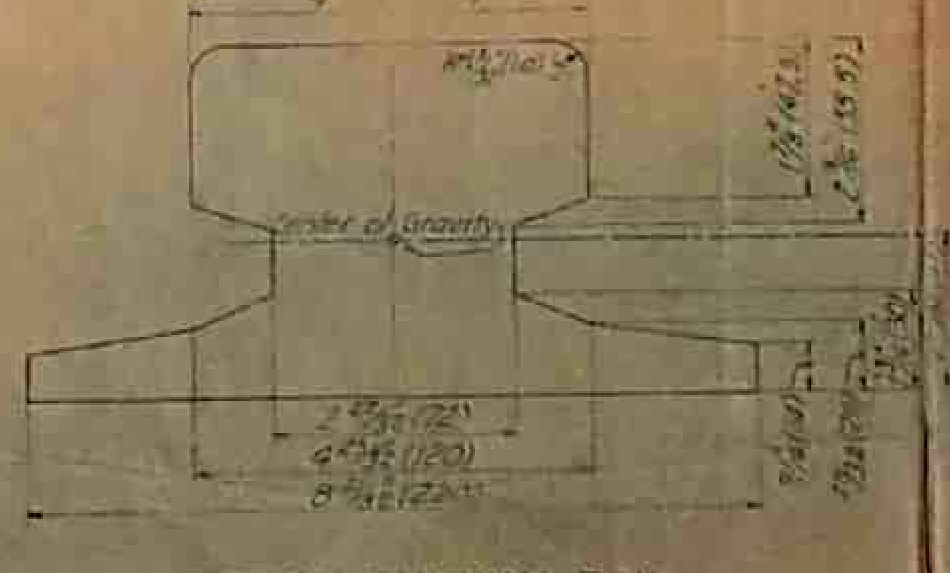


CONDUCTOR ARRANGEMENT

Scale 0 1 Foot

(Equiv dims in mm)

① Feedrail Corporation - Feedrail "100" Plain Track or equal
② Feedrail Corporation - Feedrail "100" Trolleys or equal



SECTION RUNWAY RAIL

Scale 0 50 mm

APROVECHAMIENTO HIDROELÉCTRICO
DEL RÍO NEGRO - URUGUAY

POWER HOUSE- Crane clearance diagrams.

USINA- Diagramas de espacio libre para la grúa

HARZA ENGINEERING COMPANY
ENGINEERS - CHICAGO

RIONE - URUGUAY

DATE
9-21-43

57

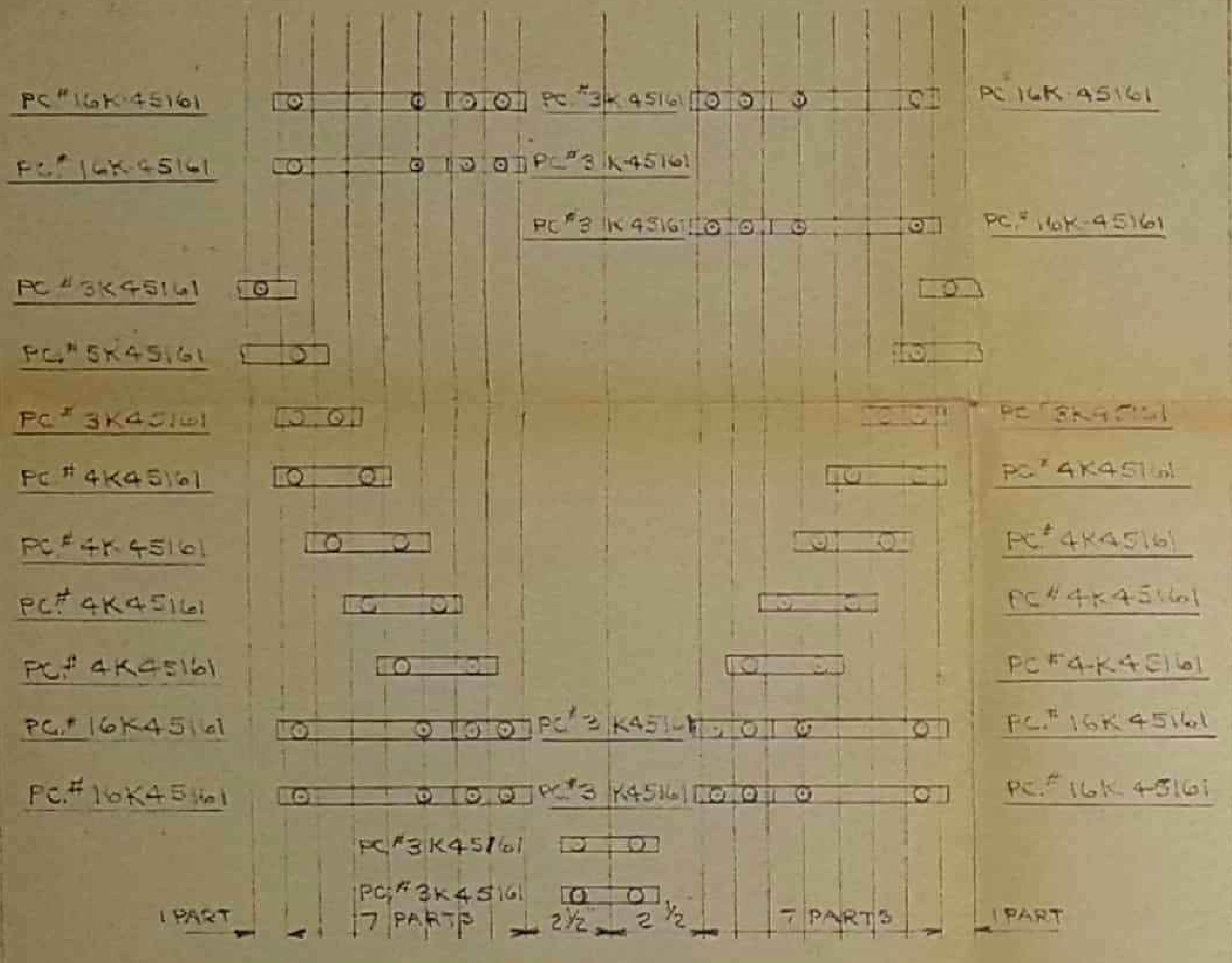
554 d151 M1

DWG. NO. K52675

BILL OF MATERIAL

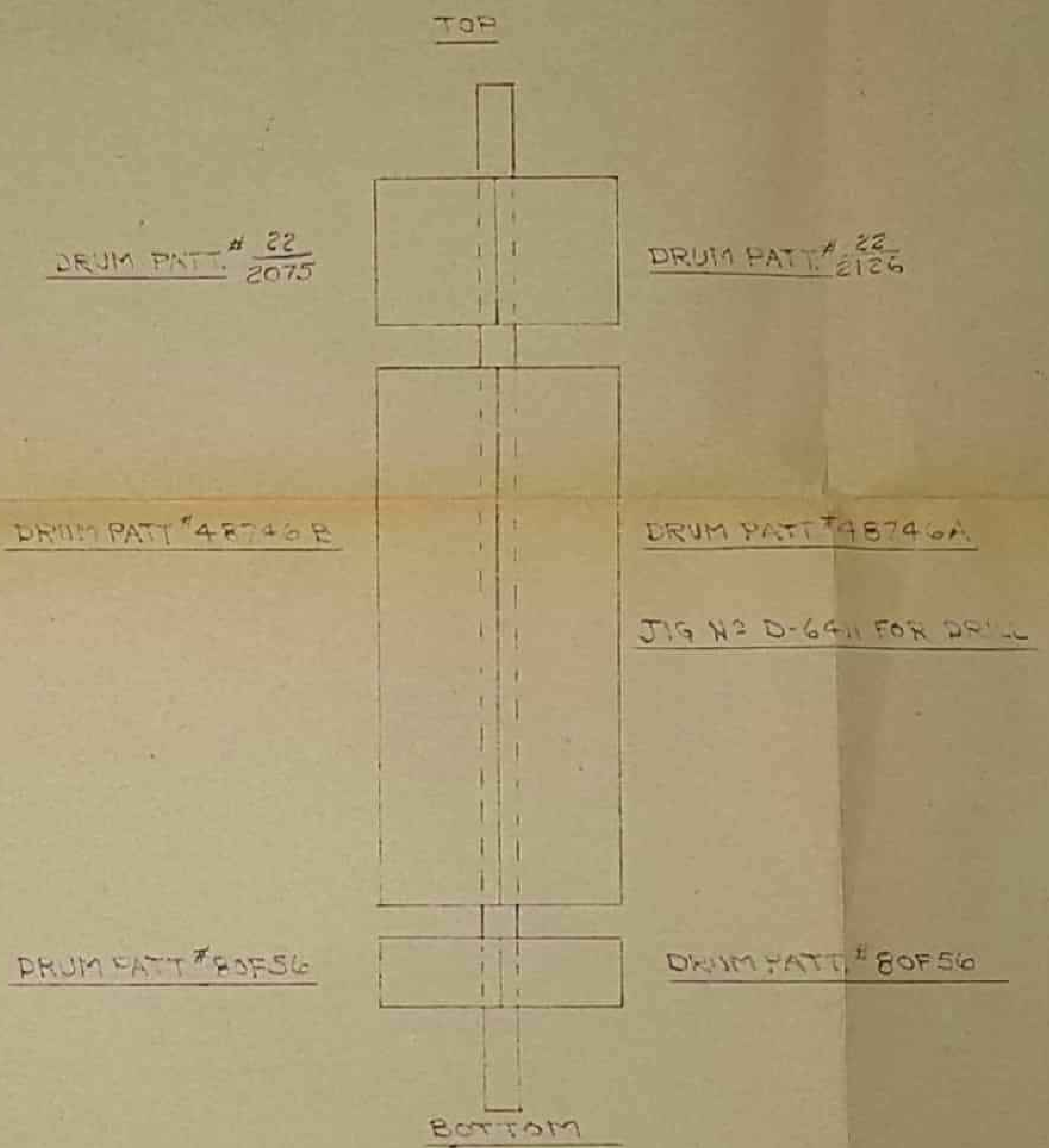
NO REQ.	NAME	PART NO.	PATT NO.	MAT
13	SEGMENTS	3K45161	319 LG	[illegible]
1	"	5K45161	3955 LG	"
8	"	16K45161	4394 LG	"
8	"	4K45161	3076 LG	"
64	RD HD MACH. SCRS.	830		STL.

TYPE R-102X & R-2101-R CONTROLLERS



K52675

TYPE R-102X & R-2101-R CONTROLLERS
LEVER ON THIS END FOR FRONT
OPERATED CONTROL



LEVER ON THIS END FOR REAR
OPERATED CONTROLLER

K52675

2A1

MAIN HOIST
AUX. HOIST

ALL MACHINE DIMENSIONS TO BE HELD
TO ± UNLESS OTHERWISE SPECIFIED

PART NO.	PATTERN OR DIE NO.	DESCRIPTION	MAT.	NAME DATE

SCALE	DATE	TOOL NO.	SIMILAR TO
	12-11-36		

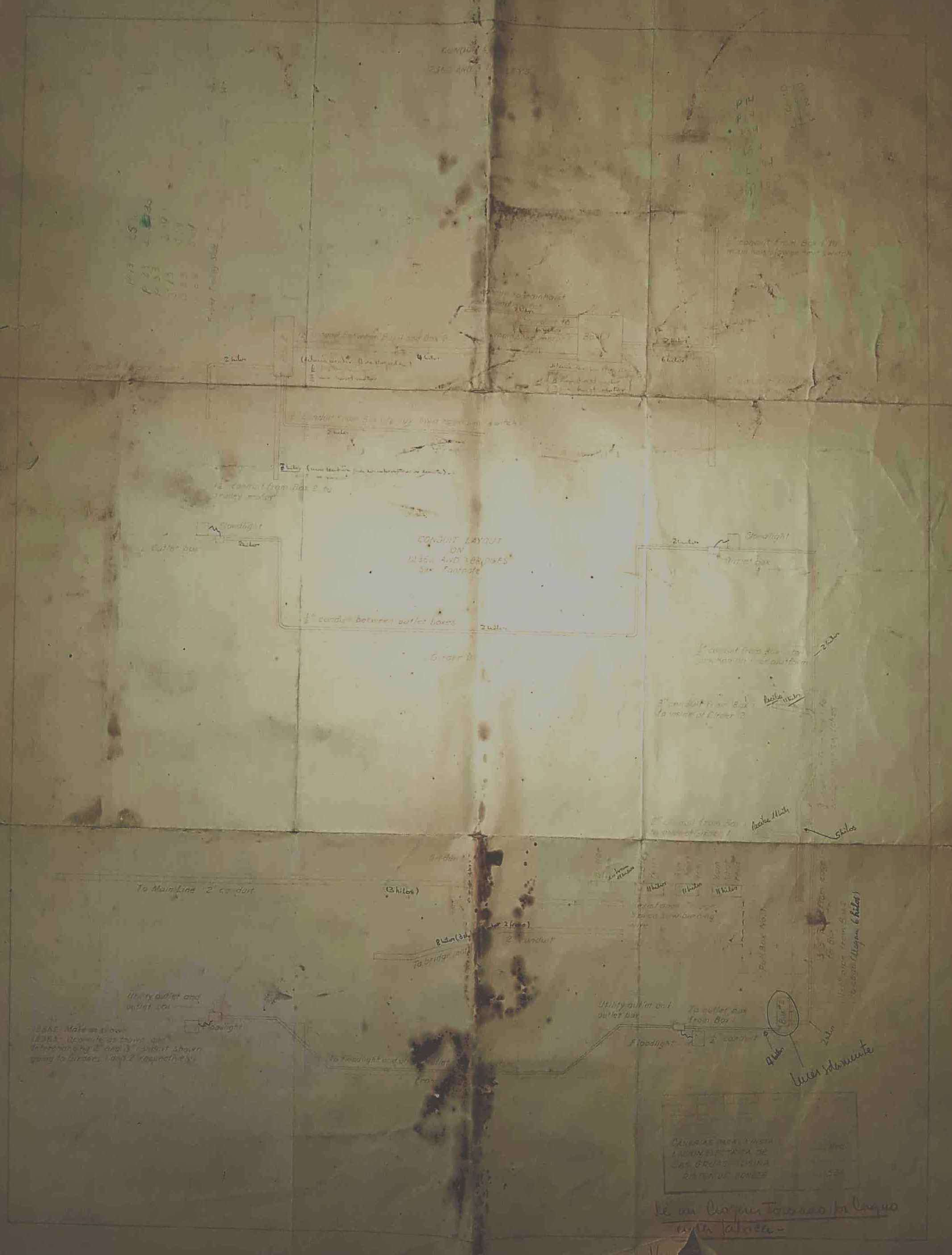
DR. BY VMC 3-19-52
TR. BY E.P.
CH. BY F.W.W.
APP. BY CHF. ENG.
APP. CHF. DRAFT.

HARNISCHFEGER CORPORATION
MILWAUKEE, WIS.

SEGMENT LAYOUT
R 2101(R) CONTROLLER

FIRST MADE FOR

DWG. NO. K52675



Ve con Orejuela Tarasco por Luyuo
en taller—

MATERIALES EMPLEADOS PARA MONTAJE DE LAS GRUAS MOVILES

Vale Nº	Fecha	Descripción.-
23790	4-IX-44	5 lts. gas oil
		2 kg. estopa
		6 hojas tela esmeril
25705	15-IX	2 hojas tela esmeril
		1 lampara de 75 Wts
		pintura colorada
25707	15	12 hojas tela esmeril
26785	25	5 litros gas oil
		2 kg trapos
		1 " estopa
26790	26	6 hojas tela esmeril 000
		6 hojas tela esmeril 0
27356	28	5 lts. gas oil
		12 hojas tela esmeril
27359	29	5 lts. gas oil
27360	29	1 ovillo piolin
		2 kg estopa
27362	29	2 " estopa
27365	30	5 lts gas oil
		12 hojas tela esmeril
27380	3-X	10 litros de gas oil
27391	4	12 hojas tela esmeril
		2 kg estopa
		2 " trapos
27396	4	8 pasadores de ¼" x 2½"
27400	5	5 lts gas oil
27711	7	2 kg estopa
27712	7	5 lts gas oil
27774	16	12 tornillos ½" x 65 m.m.
~~27775~~	~~16~~	~~1 compas guia~~
		~~8 picos cortadores~~
		~~4 toberas, 1 cortador; 1 llave de ¼"~~

27718	17-X	2	mechas espirales 25 m.m.
		2	" " 33 m.m.
27721	17	2	mechas espirales de 12½ m.m.
		1	mecha espiral de 8 m.m.
		1	kg estopa
27725	18	200	gms cera virgen
27726	18	( ) 1	pedazo planchuela hierro 1" x 5" x 2.5 mt long.
		( ) 1	" " " 1" x 5" x 55 cm.
27727	18	2	hojas tela esmeril
27738	19	1	kg estopa
		( ) 1	metro de madera
27746	21	4	hojas de sierra 12"
		1	" " " 50 cm.
27781	23	1	kg estopa
27783	23	6	hojas tela esmeril
27797	25	8	prensacables de 20 m.m.
28203	25	1	mecha 18 m.m.
		1	" 22 m.m.
28208	26	4	prensacables de 20 m.m.
		2	grilletes de 3/4"
		2	" de 1"
28211	26	6	grilletes de 3/4"
28218	27	6	hojas tela esmeril
28220	27	1	paquete electrodos 6 m.m. forrados
28223	28	16	mts cable acero 3/4" usado
		8	prensacables de 3/4"
28225	28	60	mts. cable acero 10 m.m.
		16	prensacables para anterior
28227	28	5	lts gas oil
		2	kgs tapos
28229	28	20	mts cable 12 m.m. acero
		4	prensacables para anterior
28230	28	( ) 30	mts cable acero 3/8"
		1	kg alambre fino
		1	ovillo piolin
28238	30	2	kgs estopa
		1	" trapos
28240	30	1	ovillo piolin ; 1 K alambre 1 m.m. 12 tubos oxigeno

28249	1º-XI	2 kgs estopa
28455	2	6 hojas sierra 12"
28456	2	1 chapa de zinc acanalada 8!
28458	4	5 lts gas oil
		2 kgs de trapos
28469	6	2 " " trapos
28740	6	6 hojas tela esmeril Nº 2
		6 " " " " 1
28472	6	1 litro nafta
28473	6	5 litros gas oil
		2 kgs estopa
28475	7	4 rollos cinta negra
		1 rolo cinta aceitada
		10 mts hilo amianto
28476	7	2 rollos cinta aisladora
28477	7	36 tornillos 6 m.m. x 15 m.m.
		36 tuercas
		12 tornillos para madera
28480	8	12 tornillos 4 m.m. x 2"
		12 tuercas para idem
		24 arandelas 4 m.m.
24481	8	1 litro alcohol
24482	8	3 rollos cinta aisladora
24483	8	1 litro alcohol blanco
24484	8	4 " gas oil
		2 kgs estopa
28486	8	( ) 1 tambor aceite 1108
		( ) 1 " " 1984
		5 kgs grasa Nº 2
28487	9	4 barras de estaño
		2 rollos cinta aisladora
		1 litro nafta
28491	9	6 hojas tela esmeril Nº 2
		2 kgs estopa
28492	9	5 " grasa

28495	10-XI	8 rollos cinta aisladora
28496	10	2 lts gas oil
		2 Kgs estopa
28497	10	1 rollo cinta hilera
		3 bulones 3/8" x 25 m.m.
28500	11	70 mts cable trifásico
		1 lampara 40 Wts
28801	11	5 kgs grasa Nº 1413
28802	11	1 ovillo piolin
28803	11	12 tornillos 3/16" x 25 m.m.
		12 tornillos para madera
28804	11	4 tornillos 4 x 20 m.m.
		1 litro penetric
28805	11	5 kgs grasa 1413
28808	13	1 ovillo piolin
28809	13	1 litro nafta
		1 mt caño 3/4"
28810	13	16 bulones de ½" x 180 m.m.
		16 arandelas de ½"
28813	14	5 litros gas iol
		1 kg trapos
		4 tornillos 3/16" x 50 m.m.
		4 tuercas 3/16"
28817	14	150 kgs carbon de fragua
28818	14	2 litros de gas oil
28824	15	100 mts cable vulcanizado 10 m.m.
		4 rollos cinta aisladora
28828	15	2 lamparas 220-1000 Wts
		1 lt gas oil
28829	16	1 ovillo piolin
28830	16	4 rollos cinta aisladora
		25 mts cable goma bipolar
		1 porta-lamparas
28835	16	1 kg alambre fino
28836	16	3 ovillos piolin
28839	16	6 tornillos para madera
		150 kgs carbon de fragua
28843	16	2 kgs estopa
		4 lts gas oil; 6 hojas tela esmeril

28844	16-XI	2 chapas de zinc acanalado
28847	16	½ kg vaselina líquida
		4 rollos cinta aisladora
28849	17	2 lamparas 100 Wts
		1 " 60 "
28850	17	4 estampas para martillos
28952	17	1 tiza de cera azul
28953	17	2 tapones cartuchos 200 x 1500
28955	17	6 tablones de 5.5 mts de 12" x 2"
28959	20	3 tapones fusibles de 200 amp
28962	20	1 kgs clavos de 4 "
		1 " " " 3"
28963	20	2 kgs estopa
		4 ltros gas oil
28964	20	5 bulones de 3/8" x 30 m.m.
28966	20	4 tornillos 3/8" x 50 m.m.
28967	20	1 kg alambre negro
28969	20	1 ovillo piolin
		5 kgs grasa movil Nº 5
28973	21	1 litro ~~xxx~~ aceite
28974	21	18 aisladores 70 x 150
		150 mts cable usado 150 m.m.
28976	22	8 lts gas oil
		2 Kgs estopa
		3 rollos cinta aisladora
		2 " " hilera
28980	22	3 fusibles 80 amp
		3 tapas para anterior
		3 rollos cinta aisladora
28987	22	4 litros gas oil
28989	22	1 lima cuchillo
		1 mango de madera
28993	23	1 tambor grasa movil verde
28995	23	2 kgs estopa
28998	23	5 litros gas oil; 2 kgs estopa.

hasta el dia 23 de noviembre

FORM NO. 0346

PACKING LIST
HARNISCHFEGER CORPORATION

DATE APRIL 30, 1944

SHIPPED TO BAKER IRONS & DOCKSTADER, INC. 500 NATCHEZ STREET

ADDRESS NEW ORLEANS, LOUISIANA

CONSIGNED TO (FORWARDER)

ADDRESS

MACHINE—MODEL SERIAL NUMBER 12362 SPECIAL ORDERS

MARKS	
RIONE MONTEVIDEO URUGUAY SOUTH AMERICA GROSS KILOS TARE NET CUBIC FEET PKG. NO.1-30 INC. MADE IN U.S.A.	CAR INITIAL & NUMBER R.I. 90884, MIL 63723, MIL 650728, MIL 65816 INLAND ROUTING CMSTP&P - EJ&E - I.C. SAILING FROM ON S. S. DATE SHIPMENT CONSISTS OF BOXES 15 ✓ CRATES 6 ✓ PIECES 9 ✓

PKG. NO.	DIMENSIONS	TOTAL CU. FT.	POUNDS			KILOS		
			GROSS	TARE	NET	GROSS	TARE	NET
1 of 30	7'8"x2'8"x38'6"	788	21,625	x	21,625	9,817		9,817
2 " 30	7'8"x2'8"x36'2"	740	19,615	x	19,615	8,905		8,905
3 " 30	7'8"x2'8"x36'2"	740	19,400	x	19,400	8,807		8,807
4 " 30	7'8"x2'8"x38'6"	788	21,975	x	21,975	9,976		9,976
5 " 30	4'7"x3' x10'11"	149	2,770	x	2,770	1,275		1,275
6 " 30	5'4"x2'2"x11'7"	133	3,050	x	3,050	1,384		1,384
7 " 30	5'4"x2'2"x11'7"	133	3,050	x	3,050	1,384		1,384
8 " 30	5'4"x2'2"x11'7"	133	2,960	x	2,960	1,343		1,343
9 " 30	5'4"x2'2"x11'7"	133	2,960	x	2,960	1,343		1,343
10 " 30	3'7"x3'4"x6'6"	77	5,960	540	5,420	2,705	244	2,461
11 " 30	3'7"x3'4"x6'6"	77	5,250	590	4,660	2,383	267	2,115
12 " 30	4'x5'9"x6'8"	153	8,400	1,075	7,325	3,813	488	3,325
13 " 30	1'x2'x19'9"	39	3,030	475	2,555	1,375	215	1,169
14 " 30	3'4"x3'7"x21'7"	544	8,400	1,940	6,460	3,813	880	2,932
15 " 30	5'x5'11"x12'4"	364	13,200	2,160	11,040	5,992	980	5,012
16 " 30	2'7"x3'2"x12'1"	98	6,200	595	5,605	2,814	269	2,544
17 " 30	7'3"x4'8"x15'6"	525	9,500	-1,100	8,400	4,312	499	3,813
18 " 30	6'3"x4'4"x15'6"	419	5,800	- 560	5,240	2,632	254	2,378
19 " 30	3'5"x2'3"x5'10"	44	1,550	800	750	703	362	340
20 " 30	3'5"x3'7"x14'7"	178	6,300	970	5,330	2,860	439	2,419
21 " 30	3'3"x6'7"x7'11"	169	6,100	850	5,250	2,769	385	2,383
22 of 30	5'11"x5'2"x13'6"	412	21,170	-1,925	19,245	9,611	964	8,737
23 " 30	3'1"x2'9"x15'	127	5,900	865	5,035	2,678	392	2,285
24 " 30	1'10"x5'11"x6'11"	129	740	- 340	400	335	154	181
25 " 30	3'4"x3'9"x9'	112	4,310	900	3,410	1,956	408	1,548
26 " 30	3'1"x4'x4"	49	2,610	- 470	2,140	1,184	213	971
27 " 30	2'11"x2'8"x2'8"	20	844	- 140	715	387	63	324
28 " 30	5'4"x4'4"x7'7"	169	10,040	1,215	8,825	4,558	551	4,006
29 " 30	2'6"x3'6"x11'1"	96	2,730	385	2,345	1,239	174	1,064
30 " 30	9'3"x6'7"x7'	426	6,700	1,315	5,385	3,040	596	2,444

CRANE 12362
155 TON

SHIPPED 4-30-44
VIA CMSTP&P

R.I. 90884-53')
MIL 63723-45') Double
MIL 650728-50' Sgl.
MIL 65816-52' Sgl.

CONSIGNED TO - BAKER IRONS & DOCKSTADER, INC.
500 NATCHEZ STREET
NEW ORLEANS, LOUISIANA

ROUTED - CMSTP&P - EJ&E - I.C.
O.D.T. PERMIT - KH-1902-49K

PKG. NO. 1 of 30 - 1 Pc. Front Girder	+	21,625
PKG. NO. 2 of 30 - 1 Pc. Front Girder	+	19,615
PKG. NO. 3 of 30 - 1 Pc. Rear Girder	+	19,400
PKG. NO. 4 of 30 - 1 Pc. Rear Girder	+	21,975
PKG. NO. 5 of 30 - 1 Pc. End Ties	+ (2 pc. End Ties) (4 pc. Platform)	2,770
PKG. NO. 6 of 30 - 1 Pc. End Truck (Driver)	+	3,050
PKG. NO. 7 of 30 - 1 Pc. End Truck (Driver)	+	3,050
PKG. NO. 8 of 30 - 1 Pc. End Truck (Idler)	+	2,960
PKG. NO. 9 of 30 - 1 Pc. End Truck (Idler)	+	2,960
PKG. NO.10 of 30 - 1 Box 2 Bridge Truck Drive Wheels 2 Bridge Truck Idler Wheels	o	 3,040 2,380
PKG. NO.11 of 30 - 1 Box 4 Bridge Truck Idler Wheels	o	4,660

CRANE 12362 4-30-44

PKG. NO. 12 of 30 - 1 Box ○

1 Bridge Motor Ser. 238760	2,100
1 Bridge Gear Case	2,175
6 Cross shaft couplings	1,200
2 End truck shaft pinion guards	50
2 End truck drive shaft & Pinions	360
8 End truck axles	1,440
	7,325

PKG. NO. 13 of 30 - 1 Box ○

1 Pc. cross shaft 13'6" long	
1 Pc. cross shaft 10'0" long	2,555
2 Pc. Cross shaft 19'3-7/8" long	

PKG. NO. 14 of 30 - 1 Box ○

Platform lumber	1,990
2 Bridge connectors	130
2 End ties	400
Platform angles & structural steel	3,940
	6,460

PKG. NO. 15 of 30 - 1 Box ○

Main hoist girt	10,300
1 Bag of setup bolts for girder splice)	
1 Bag 5/16 " carriage bolts)	
1 Bag grease cups, wire board bolts & extra platform bolts)	130
16 Brass washers	140
7 Keyways	15
2 Boxes assembly bolts)	400
1 Box of rivets))	
1 Coupling	45
2 Nameplates	10
	11,040

PKG. NO. 16 of 30 - 1 Box ○

Aux. trolley Girt	2,730
4 Cross shaft brackets	860
4 Trolley shaft couplings	470
1 " " support	70
8 " Oil waste boxes	520
4 " rail guards	60
2 Limit switches & weights	125
5 Bags trolley assembly bolts	180
2 Drum limit switches	25
2 Main drum shaft bearings	60
8 Trolley shaft bearings	200
4 Bags main girt bolts	210
1 Shaft bearing	20
1 Pkg. wool waste	5
8 Resistance bank brackets)	
4 Resistor Plates)	70
	5,605

PKG. NO. 17 of 30 - 1 Crate —	
Front Trolley Side	8,400
PKG. NO. 18 of 30 - 1 Crate —	
Rear Trolley Side	5,240
PKG. NO. 19 of 30 - 1 Box O	
TROLLEY DRIVE GEAR CASE CONSISTS OF	
Motor gear	
Intermediate pinion shaft	
Truck pinion shaft	
Intermediate gear	
Bearings & caps	750
PKG. NO. 20 of 30 - 1 Box O	
Main pinion shaft	2,970
Load brake assembly	800
Trolley drive shaft	400
1 Drive shaft bearing	25
36 Pcs. conduit pipe	670
2 Wire junction boxes	115
2 Trolley collectors & guards	270
4 Bridge wire supports	80
	5,330
PKG. NO. 21 of 30 - 1 Box O	
1 Main hoist motor Ser. 238758	2,090
1 Aux Hoist Motor Ser. 238764	1,520
1 Trolley motor Ser. 238762	960
1 Main hoist gear case	680
	5,250
PKG. NO. 22 of 30 - 1 Crate —	
Main Hoist Drum	19,245
PKG. NO. 23 of 30 - 1 Box O	
Aux. hoist drum with load brake & racket assembly	4,710
Main hoist motor coupling shaft	250
Aux hoist motor coupling shaft	75
	5,035
PKG. NO. 24 of 30 - 1 Crate —	
Main Hoist Gear Case	400
PKG. NO. 25 of 30 - 1 Box O	
1 Trolley drive wheel	1,130
3 Trolley Idler Wheel	2,280

PKG. NO. 26 of 30 - 1 Crate —

Main Hoist Cable (1-pc.wire rope)	2,140

PKG. NO. 27 of 30 - 1 Crate —

Aux Hoist Cable (1-pc.wire rope)	715

PKG. NO. 28 of 30 - 1 Box O

Main hoist bottom block	7,100
Aux hoist bottom block	1,450
Motor support bracket	275
	8,825

PKG. NO. 29 of 30 - 1 Box O

Material for personal order #12362-3S1	
8 Pkgs. collector bars	2,175
Connections & Misc. runway material	170
	2,345

PKG. NO. 30 of 30 - 1 Box O

1 Envelope containing wiring diagram	
1 Envelope containing match marking inst.	
Operators cage	3,480
2 Boxes resistance banks	820
22 Bridge wires & stretchers	340
Covered wire	380
1 Warning bell	25
1 Box of lamp shades	140
1 Box of electrical material	140
1 Pkg. Misc. electrical material	10
1 5-gal. can of paint	50
~~1 Pkg. of rivets~~	
	5,385

BOX OF RESISTANCE CONTAINS
Bridge & Trolley drive resistance

BOX OF RESISTANCE CONTAINS
Main & aux. hoist resistance

BOX OF LAMP SHADES CONTAINS
- 4 Large lamp shades
- 2 Small " "
- 1 Carton containing 5 spare resistance grids

BOX OF ELECTRICAL MATERIAL CONTAINS
- 1 Pkg. pipe material
- 2 Limit switches
- 2 Hubbel flush recepticals
- 4 light sockets
- 4 Junction boxes
- 2 Plates
- 1 Pkg. trolley terminals
- 1 Brake device
- 2 Gals brake fluid
- 1 Pkg. res. bolts
- 1 Pkg. connectors & terminals for bridge wire splices and 1/4"x3/8" machine screws
- 1 Pkg. contact fingers

PARTS BLOCKED ON R.I. 90884-53'

PKG. NOS. 17 - 18 - 22 - 30

PARTS BLOCKED ON MIL 63723-45'

PKG. NOS. 1 - 2 - 3 - 4 - 21

PARTS BLOCKED ON MIL 650728-50'

PKG. NOS. 5 - 6 - 7 - 8 - 9 - 10- 11 - 12 - 25 - 28 - 29

PARTS BLOCKED ON MIL 65816-52'

PKG. NOS. 13 - 14 - 15 - 16 - 19 - 20 - 23 - 24 - 26 - 27

- - - - - - - - - - - - - - -

Certified Correct
Donald J. Glatz
Inspector U.S.E.O.
Milwaukee, Wis

ORD. NO.	FORM
Crane #12362	
Main Hoist Motor	

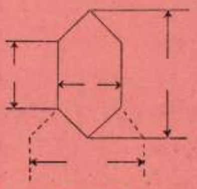
A. C.

LIST No.

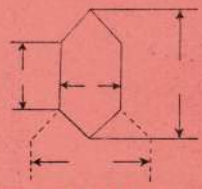
DATE	MACH. No. 238758	STAT. No. 238758	ROTOR No. 238758	
TYPE HEW	FRAME 504	PHASE 3	CYCLES 50	CARD NO.
H. P.	R. P. M.	CONT. 40°C OPEN	Ball BRG. ASSEM. DWG. No.	
H. P. 50	R. P. M. 970 - 30 Min. 55°C. Totally Enclosed			

	STATOR	ROTOR		STATOR			WOUND ROTOR	
SHEET STEEL GAGE			VOLTS	220/440				
OUTSIDE DIAM. LAM.			TURNS PER COIL					
INSIDE DIAM. LAM.			WIRE SIZE					
AIR GAP			KIND WIRE					
TOTAL LENGTH CORE			WEIGHT WIRE					
NO. & SIZE VENTS			CONN.					
NO. SLOTS			CONN. DIAG.					
SLOT DIE NO.			CROSS CONN.					
LAM. PART NO.	576F	576F	NO. OF TERM					
SLANT OF SLOTS			TERM CABLE					
TOTAL NO. COILS			NO. LOAD AMPS					
COILS PER GROUP			NO. LOAD K.W.					
TOTAL NO. GROUPS			LOCKED K.W.					
SPAN			FULL LOAD AMPS					
			LOCKED AMPS					
			INRUSH AMPS					
			OHMS RES.					

SQ. CAGE ROTOR	TOP	BOTTOM
NO. BARS		
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	



STATOR COIL FORM NO.



ROTOR COIL FORM NO.

SLIP RINGS	
NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SEC. VOLTS
1-2	2-3	1-3			1	2	3			1-2	1-3			
380	380	380	380	10	2.95	2.98	2.98	29.7	20	330	-225	2100	Open Sat.	212-212-212
500	500	500	500	20	3.26	3.26	3.25	65.13	40	485	-340	5800	999	
440	440	440	440	20	2.11	2.12	2.1	42.2	40	283	-197	3440	"	
380	380	380	380	10	2.93	2.93	2.93	29.3	20	340	-220	2400	"	
320	320	320	320	10	2.24	2.25	2.25	2247	"	230	-138	1840	"	
260	260	260	260	5	3.62	3.65	3.62	18.15	10	310	-170	1400	"	
200	200	200	200	"	2.73	2.75	2.72	13.65	"	190	-90	1000	"	
140	140	140	140	"	1.95	1.97	1.95	9.78	"	102	-35	670	"	
80	80	80	80	1	6.8	6.8	6.7	6.77	1	500	+30	530	985	
60	60	60	60	"	6.2	6.4	6.4	6.33	"	365	+115	480	970	
														METER

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. = .5 CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	Ext. Res.
1-2	2-3	1-3			1	2	3			1-2	1-3		89		
220	220	220	220	40	3.9	3.85	3.8	154.0	80	410	+105	41,200	108		.322-.322
		at	380					266				123,000	266	700	.324
160	160	160	160	40	4.85	4.82	4.8	192.9	80	280	-90	15,200			
		at	380					458				86,000			

STARTING TORQUE = 258 % F.L.	BREAKDOWN TORQUE = 345 % F.L.	MAX. RUNNING H.P. = 308 % RATED
		METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD
AC

Form No. D-39
2500 1-44 ® 24576

BRAKE — DYNAMOMETER TEST BRAKE CONST. = 2000 CURVE NO.

VOLTS 1-2	VOLTS 2-3 (4)	VOLTS 1-3	AVE. VOLTS	MULTIP.	AMPERES 1	AMPERES 2	AMPERES 3	AVE. AMPS	MULTIP.	WATTS 1-2	WATTS 1-3	TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
472	472	477	473.7	20	2.07	1.92	1.87	39.07	40	-5.0	405	16,400	1186		27.5
476	468	474	472.7	"	2.43	2.25	2.15	45.53	"	95	510	24,200	1180		43
470	465	474	469.7	"	2.9	2.7	2.6	54.67	"	220	625	33,800	1172		64.5
465	458	468	463.7	"	3.5	3.25	3.13	65.87	"	328	748	43,040	1164		86
465	458	468	463.7	"	4.15	3.92	3.78	79.0	"	450	890	53,600	1156		107.5
463	454	466	461	"	4.9	4.58	4.38	92.4	"	550	1018	62,720	1148		129.0
360			360			Pull	out						1040		222
		at	456												356

Brake Test and Heat Run on 60 Cycles FULL LOAD ROTOR AMPERES = 80-99

Brake HP = RPM x Lbs /2000 - Oscillates METER

BRAKE — DYNAM. TEST **TEMPERATURE TEST** LOAD = H. P. = % =

H. P.	TORQUE FT.-LB.	EFF. %	P. F. %	VOLTS 1-2	VOLTS 2-3 (4)	VOLTS 1-3	AMPERES x 20 1	AMPERES 2	AMPERES 3	WATTS x 40 1-2	WATTS 2-3 (4)	WATTS 1-3	R. P. M.	TIME	
16.3	72.1	74.0	51.1	440	435	438	4.08	3.53	3.78	880	345		1165	8:40	99 lbs
25.4	113	78.3	65.8	438	432	438	4.11	3.55	3.8	885	345		1164	8:50	" "
37.8	169	83.5	76.0	440	435	438	4.1	3.53	3.8	885	345		1163	9:00	" "
50.1	226	86.8	81.4	440	435	438	4.1	3.52	3.8	885	345		1163	9:10	" "
62.1	282	86.4	84.5												
74.0	338	88.0	84.2												
185	935														

PART	RUNNING TEMPERATURES		H. P.			% LOAD	SHUT DOWN TEMPERATURES			METER °C RISE
TIME			8:40	8:50	9:00	9:10				
STATOR	Core	Thermometer	23	39	46	53	55	56		33
CORE	"	Pyrometer	23	40	47	53	56	57		34
STATOR	Winding	"	23	44	50	56	59	60		37
WIND'G.	"	Thermometer	23				57			34
ROTOR										
CORE										
ROTOR	Winding	Pyrometer	23				48	52		29
WIND'G.		Thermometer	23				47	49	51	28
SLIP RING		"					45	50	52	29
FR'T. BRG										
REAR BRG.										
AIR IN										
AIR OUT										
ROOM	Thermometer		23	23	23	23	23			

STATOR RESIST. COLD AT	24°C	.089	.089	.089	RISE BY RES.	INSULATION RESISTANCE		DIELECTRIC TEST
STATOR RESIST. HOT AT	23°C	.104	.104	.104	ST. 45 °C.	STATOR	MEGOHMS	2000 VOLTS A. C. 60 SEC.
ROTOR RESIST. COLD AT	24°C	.031	.031	.031	RO. 43 °C.	ROTOR	"	1500 VOLTS A. C. 60 SEC.
ROTOR RESIST. HOT AT	23°C	.036	.036	.036		BRUSHES	"	1500 VOLTS A. C. 60 SEC.

BEARINGS Ball

END PLAY

SLIP RINGS

BRUSHES

STARTING NOISE

NO LOAD NOISE

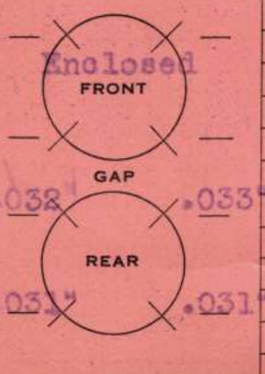
FULL LOAD NOISE

BEARING NOISE

AIR NOISE

REMARKS Test witnessed by:
H. L. Shuvr, U.S.23

H.L. Shurr



PARTS ORDER NO. DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO.

CARD NO. DATE 2/11/44 TESTED BY S.H.P. O. K. BY

BRAKE — DYNAMOMETER TEST **BRAKE CONST. =** **CURVE NO.**

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
1-2	2-3 (4)	1-3			1	2	3			1-2	1-3				

FULL LOAD ROTOR AMPERES =

METER

BRAKE — DYNAM. TEST				TEMPERATURE TEST										LOAD = H. P. = % =	
H. P.	TORQUE FT.-LB.	EFF.	P. F.	VOLTS			AMPERES			WATTS			R. P. M.	TIME	
				1-2	2-3 (4)	1-3	1	2	3	1-2	2-3 (4)	1-3			

METER

PART	RUNNING TEMPERATURES H. P. % LOAD	SHUT DOWN TEMPERATURES	°C RISE
TIME			
STATOR CORE			
STATOR WIND'G.			
ROTOR CORE			
ROTOR WIND'G.			
SLIP RING			
FR'T. BRG			
REAR BRG.			
AIR IN			
AIR OUT			
ROOM			

STATOR RESIST. COLD AT 25 °C	.141	.141	.141	RISE BY RES.	INSULATION RESISTANCE		DIELECTRIC TEST	
STATOR RESIST. HOT AT °C				ST. °C.	STATOR	MEGOHMS	2000 VOLTS A. C.	60 SEC.
ROTOR RESIST. COLD AT 25 °C	.035	.035	.035	RO. °C.	ROTOR	"	1500 VOLTS A. C.	60 SEC.
ROTOR RESIST. HOT AT °C					BRUSHES	"	1500 VOLTS A. C.	60 SEC.

BEARINGS Ball

END PLAY

SLIP RINGS

BRUSHES

STARTING NOISE

NO LOAD NOISE

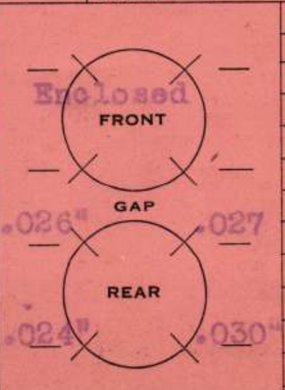
FULL LOAD NOISE

BEARING NOISE

AIR NOISE

REMARKS Test witnessed by:
H.L.Shurr U.S.23

H.L. Shurr



PARTS ORDER No.	DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO

CARD NO. DATE 3/31/44 TESTED BY S.H.F. O. K. BY

ORD. NO.	FORM
Crane No.12363 Aux.Hoist Motor	

238765 A. C.

LIST No.

DATE		MACH. No. 238765		STAT. No. 238765		ROTOR No. 238765	
TYPE HEW		FRAME 445		PHASE 3		CYCLES 50	CARD NO.
H. P.	R. P. M.	CONT. 40°C OPEN		Ball	BRG. ASSEM. DWG. No.		
H. P. 40	R. P. M. 960 - 30 Min. 55°C. Tot. Encl.						

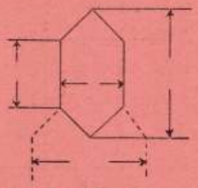
6 Poles

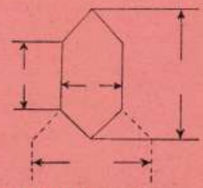
	STATOR	ROTOR
SHEET STEEL GAGE		
OUTSIDE DIAM. LAM.		
INSIDE DIAM. LAM.		
AIR GAP		
TOTAL LENGTH CORE		
NO. & SIZE VENTS		
NO. SLOTS		
SLOT DIE NO.		
LAM. PART NO.	576F	576F
SLANT OF SLOTS		
TOTAL NO. COILS		
COILS PER GROUP		
TOTAL NO. GROUPS		
SPAN		

	STATOR			WOUND ROTOR	
VOLTS	220/440				
TURNS PER COIL					
WIRE SIZE					
KIND WIRE					
WEIGHT WIRE					
CONN.					
CONN. DIAG.					
CROSS CONN.					
NO. OF TERM					
TERM CABLE					
NO. LOAD AMPS					
NO. LOAD K.W.					
LOCKED K.W.					
FULL LOAD AMPS					
LOCKED AMPS					
INRUSH AMPS					
OHMS RES.					

SQ. CAGE ROTOR

	TOP	BOTTOM
NO. BARS		
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	


STATOR COIL FORM NO.


ROTOR COIL FORM NO.

SLIP RINGS

NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SEC. VOLTS
1-2	2-3	1-3			1	2	3			1-2	1-3		Open	
380	380	380	380	5	3.7	3.7	3.74	18.57	10	405	-295	1100	Sat.	185-185-185
380	380	380	380	5	3.6	3.62	3.62	18.07	10	410	-260	1500	1000	

METER

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. =

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	
1-2	2-3	1-3			1	2	3			1-2	1-3				
200	200	200	200	40	4.05	4.03	4.0	162	80	290	-100	15,200			
		at	380					308				54,900			

STARTING TORQUE = % F.L. BREAKDOWN TORQUE = % F.L. MAX. RUNNING H.P. = % RATED

METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD
AC

Form No. D-39
2500 1-44 24576

BRAKE — DYNAMOMETER TEST BRAKE CONST. = CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
1-2	2-3 (4)	1-3			1	2	3			1-2	1-3				

FULL LOAD ROTOR AMPERES =

METER

BRAKE — DYNAM. TEST				TEMPERATURE TEST									LOAD = H. P. = % =	
H. P.	TORQUE FT.-LB.	EFF.	P. F.	VOLTS			AMPERES			WATTS			R. P. M.	TIME
				1-2	2-3 (4)	1-3	1	2	3	1-2	2-3 (4)	1-3		

METER

PART	RUNNING TEMPERATURES H. P. % LOAD	SHUT DOWN TEMPERATURES	°C RISE
TIME			
STATOR			
CORE			
STATOR			
WIND'G.			
ROTOR			
CORE			
ROTOR			
WIND'G.			
SLIP RING			
FR'T. BRG			
REAR BRG.			
AIR IN			
AIR OUT			
ROOM			

					RISE BY RES.	INSULATION RESISTANCE	DIELECTRIC TEST
STATOR RESIST. COLD AT	25 °C	.141	.141	.141			
STATOR RESIST. HOT AT	°C				ST. °C.	STATOR MEGOHMS	2000 VOLTS A. C. 60 SEC.
ROTOR RESIST. COLD AT	25 °C	.035	.035	.035	RO. °C.	ROTOR "	1500 VOLTS A. C. 60 SEC.
ROTOR RESIST. HOT AT	°C					BRUSHES "	1500 VOLTS A. C. 60 SEC.

BEARINGS Ball

END PLAY

SLIP RINGS

BRUSHES

STARTING NOISE

NO LOAD NOISE

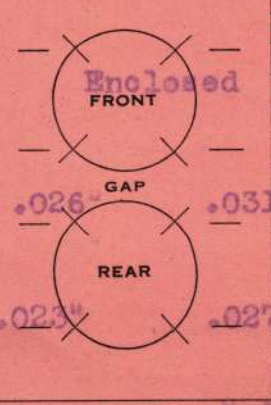
FULL LOAD NOISE

BEARING NOISE

AIR NOISE

REMARKS Test witnessed by:
H.L.Shurr, U.S.23

H.L. Shurr



PARTS ORDER NO.	DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO.

CARD NO. DATE 3/31/44 TESTED BY S.N.P. O. K. BY

ORD. NO.	FORM
Crane No.12362 Aux. Hoist Motor	

238764 A. C.

LIST No.

DATE	MACH. No. 238764	STAT. No. 238764	ROTOR No. 238764	
TYPE HEW	FRAME 445	PHASE 3	CYCLES 50	CARD NO.
H. P.	R. P. M.	CONT. 40°C OPEN Ball	BRG. ASSEM. DWG. No.	
H. P. 40	R. P. M. 960 - 30 Min. 55°C. Tot. Encl.			

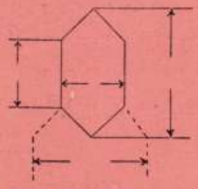
6 Poles

	STATOR	ROTOR
SHEET STEEL GAGE		
OUTSIDE DIAM. LAM.		
INSIDE DIAM. LAM.		
AIR GAP		
TOTAL LENGTH CORE		
NO. & SIZE VENTS		
NO. SLOTS		
SLOT DIE NO.		
LAM. PART NO.	576F	576F
SLANT OF SLOTS		
TOTAL NO. COILS		
COILS PER GROUP		
TOTAL NO. GROUPS		
SPAN		

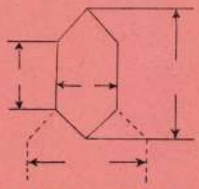
	STATOR			WOUND ROTOR	
VOLTS	220/440				
TURNS PER COIL					
WIRE SIZE					
KIND WIRE					
WEIGHT WIRE					
CONN.					
CONN. DIAG.					
CROSS CONN.					
NO. OF TERM					
TERM CABLE					
NO. LOAD AMPS					
NO. LOAD K.W.					
LOCKED K.W.					
FULL LOAD AMPS					
LOCKED AMPS					
INRUSH AMPS					
OHMS RES.					

SQ. CAGE ROTOR

	TOP	BOTTOM
NO. BARS		
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	



STATOR COIL FORM NO.



ROTOR COIL FORM NO.

SLIP RINGS

NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SEC. VOLTS
1-2	2-3	1-3			1	2	3			1-2	1-3			
380	380	380	380	5	3.65	3.65	3.67	18.28	10	400	-280	1200	Open Sat.	185 -185-185
380	380	380	380	5	3.57	3.6	3.57	17.9	10	420	-250	1700	1000	

METER

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. =

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	
1-2	2-3	1-3			1	2	3			1-2	1-3				
200	200	200	200	40	4.0	4.0	3.98	159.7	80	280	-100	14,400			
		at	380					304				52,000			

STARTING TORQUE = % F.L. BREAKDOWN TORQUE = % F.L. MAX. RUNNING H.P. = % RATED

METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD AC

Form No. D-89
2500 1-44 ® 24576

BRAKE — DYNAMOMETER TEST BRAKE CONST. = 2000 CURVE NO.

VOLTS 1-2	VOLTS 2-3 (4)	VOLTS 1-3	AVE. VOLTS	MULTIP.	AMPERES 1	AMPERES 2	AMPERES 3	AVE. AMPS	MULTIP.	WATTS 1-2	WATTS 1-3	TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
380	380	380	380	10	2.32	2.32	2.32	23.2	20	367	-20	6940	741		20.5
380	380	380	380	10	2.52	2.52	2.52	25.2	20	420	+20	8800	735		27.6
380	380	380	380	10	3.0	3.0	3.0	30.0	20	537	112	12.980	727		41.4
380	380	380	380	10	3.58	3.6	3.6	35.95	20	665	205	17.400	720		55.2
380	380	380	380	10	4.23	4.24	4.23	42.33	20	780	295	21.500	710		69.0
380	380	380	380	10	4.93	4.94	4.94	49.37	20	915	360	25.500	695		82.8
300			300	Pulls out									485		102
		at	380												163.5

Brake HP = RPM x Lbs./2000

FULL LOAD ROTOR AMPERES = 53

METER

BRAKE — DYNAM. TEST **TEMPERATURE TEST** LOAD = H. P. = % =

H. P.	TORQUE FT.-LB.	EFF. (%)	P. F. (%)	VOLTS 1-2	VOLTS 2-3 (4)	VOLTS 1-3	×10 AMPERES 1	AMPERES 2	AMPERES 3	×20 WATTS 1-2	WATTS 2-3 (4)	WATTS 1-3	R. P. M.	TIME	Lbs.
7.60	53.9	81.9	45.4	380	380	380	3.53	3.53	3.54	645	197		724	9:15	55.5
10.13	72.5	86.0	53.0	380	380	380	3.53	3.54	3.54	648	198		723	9:25	"
15.05	109	86.5	65.6	380	380	380	3.54	3.54	3.55	650	200		722	9:35	"
19.9	145	85.3	73.5	380	380	380	3.54	3.54	3.55	650	202		721	9:45	"
24.5	181	85.0	77.2												
28.8	218	84.3	78.5												
39.6	430														

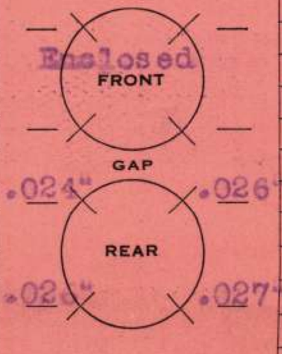
METER

PART	RUNNING TEMPERATURES	H. P.		% LOAD	SHUT DOWN TEMPERATURES			°C RISE
TIME		9:15	9:25	9:35	9:45			
STATOR	Core Pyrometer	22	30	41	46	46	47		25
CORE	" Thermometer	22	30	40	45	46	48		26
STATOR	Winding "					48	49		27
WIND'G.	" Pyrometer	22	36	45	49	49	50		28
ROTOR									
CORE									
ROTOR	Winding Pyrometer					48	49		27
WIND'G.	" Thermometer					45	47	48	26
SLIP RING	" "					50			28
FR'T. BRG									
REAR BRG.									
AIR IN									
AIR OUT									
ROOM	Thermometer	22	22	22	22	22			

					RISE BY RES.	INSULATION RESISTANCE		DIELECTRIC TEST
STATOR RESIST. COLD AT	22 °C	.294	.294	.294				
STATOR RESIST. HOT AT	22 °C	.329	.329	.329	ST. 31°C.	STATOR	MEGOHMS	2000 VOLTS A. C. 60 SEC.
ROTOR RESIST. COLD AT	22 °C	.108	.108	.108	RO. 41°C.	ROTOR	"	1500 VOLTS A. C. 60 SEC.
ROTOR RESIST. HOT AT	22 °C	.125	.125	.125		BRUSHES	"	1500 VOLTS A. C. 60 SEC.

BEARINGS	Ball
END PLAY	
SLIP RINGS	
BRUSHES	
STARTING NOISE	
NO LOAD NOISE	
FULL LOAD NOISE	
BEARING NOISE	
AIR NOISE	
REMARKS	Test witnessed by: H. L. Shorr U.S.23

H. L. Shorr



PARTS ORDER NO.	DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO.

CARD NO. DATE 4/4/44 TESTED BY S.H.P. O. K. BY

ORD. NO.	FORM
Crane No.12363 Trolley Motor	

A. C.

LIST No.

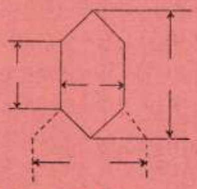
DATE	MACH. No. 238763	STAT. No. 238763	ROTOR No. 238763	
TYPE [illegible]	FRAME 405	PHASE 3	CYCLES 50	CARD NO.

H. P. R. P. M. CONT. 40°C OPEN Ball BRG. ASSEM. DWG. No.

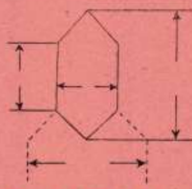
H. P. 20 R. P. M. 725 - 30 Min. 55°C. Tot. Encl.

8 Poles	STATOR	ROTOR		STATOR			WOUND ROTOR	
SHEET STEEL GAGE			VOLTS	220/440				
OUTSIDE DIAM. LAM.			TURNS PER COIL					
INSIDE DIAM. LAM.			WIRE SIZE					
AIR GAP			KIND WIRE					
TOTAL LENGTH CORE			WEIGHT WIRE					
NO. & SIZE VENTS			CONN.					
NO. SLOTS			CONN. DIAG.					
SLOT DIE NO.			CROSS CONN.					
LAM. PART NO.	576F	576F	NO. OF TERM					
SLANT OF SLOTS			TERM CABLE					
TOTAL NO. COILS			NO. LOAD AMPS					
COILS PER GROUP			NO. LOAD K.W.					
TOTAL NO. GROUPS			LOCKED K.W.					
SPAN			FULL LOAD AMPS					
SQ. CAGE ROTOR			LOCKED AMPS					
	TOP	BOTTOM	INRUSH AMPS					
NO. BARS			OHMS RES.					

SQ. CAGE ROTOR	TOP	BOTTOM
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	



STATOR COIL FORM NO.



ROTOR COIL FORM NO.

SLIP RINGS	
NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SEC. VOLTS
1-2	2-3	1-3			1	2	3			1-2	1-3			
380	380	380	380	10	2.1	2.1	2.1	21.0	20	220	-180	800	Open Sat.	176-176-176
380	380	380	380	10	2.1	2.1	2.1	21.0	20	223	-173	1000	750	
500	500	500	500	20	2.9	2.9	2.9	58.0	40	395	-318	3080	"	
440	440	440	440	10	3.44	3.45	3.45	34.5	20	418	-340	1560	"	
380	380	380	380	10	2.09	2.09	2.1	20.93	20	225	-175	1000	"	
320	320	320	320	5	2.83	2.83	2.83	14.15	10	255	-190	650	"	
260	260	260	260	5	2.1	2.1	2.1	10.5	10	155	-112	430	"	
200	200	200	200	5	1.55	1.55	1.55	7.75	10	90	-55	350	746	
140	140	140	140	1	5.45	5.45	5.48	5.46	1	480	-270	210	740	
80	80	80	80	1	3.3	3.3	3.3	3.30	¼	410	-70	170	728	
40	40	40	40	1	2.6	2.65	2.65	2.63	⅛	200	+60	130	680	METER

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. = .5 CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	Ext. Res.
1-2	2-3	1-3			1	2	3			1-2	1-3				
260	260	260	260	20	3.45	3.4	3.37	68.13	40	430	+ 80	20,400	62 68.25		.608-.608
		at	380					99.6				43,600	132.5	348	.610
300	300	300	300	40	3.9	3.9	3.85	155.3	80	470	-50	33600			
		at	380					197				53.900			

STARTING TORQUE = 238 % F.L.	BREAKDOWN TORQUE = 295 % F.L.	MAX. RUNNING H.P. = 198 % RATED
		METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD
AC

Form No. D-39
2500 1-44 ® 24576

BRAKE — DYNAMOMETER TEST

BRAKE CONST. =

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
1-2	2-3 (4)	1-3			1	2	3			1-2	1-3				

FULL LOAD ROTOR AMPERES =

METER

BRAKE — DYNAM. TEST

TEMPERATURE TEST **LOAD =** **H. P. =** **% =**

H. P.	TORQUE FT.-LB.	EFF.	P. F.	VOLTS			AMPERES			WATTS			R. P. M.	TIME
				1-2	2-3 (4)	1-3	1	2	3	1-2	2-3 (4)	1-3		

METER

PART	RUNNING TEMPERATURES H. P. % LOAD	SHUT DOWN TEMPERATURES	°C RISE
TIME			
STATOR			
CORE			
STATOR			
WIND'G.			
ROTOR			
CORE			
ROTOR			
WIND'G.			
SLIP RING			
FR'T. BRG			
REAR BRG.			
AIR IN			
AIR OUT			
ROOM			

					RISE BY RES.	
STATOR RESIST. COLD AT	23 °C	.298	.298	.298		
STATOR RESIST. HOT AT	°C				ST.	°C
ROTOR RESIST. COLD AT	23 °C	.110	.110	.110	RO.	°C
ROTOR RESIST. HOT AT	°C					

INSULATION RESISTANCE		DIELECTRIC TEST
STATOR	MEGOHMS	2000 VOLTS A. C. 60 SEC.
ROTOR	"	1500 VOLTS A. C. 60 SEC.
BRUSHES	"	1500 VOLTS A. C. 60 SEC.

BEARINGS Ball

END PLAY

SLIP RINGS

BRUSHES

STARTING NOISE

NO LOAD NOISE

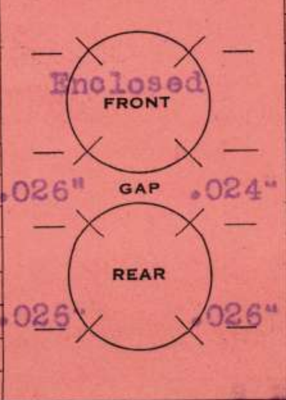
FULL LOAD NOISE

BEARING NOISE

AIR NOISE

REMARKS Test witnessed
By: H. L. Shurr U.S.23

H. L. Shurr



PARTS ORDER NO.	DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO.

CARD NO.

DATE 4/1/44

TESTED BY S.H.P.

O. K. BY

ORD. NO.

FORM

Crane #12362

Trolley Motor

A. C.

LIST No.

DATE MACH. No. 238762 STAT. No. 238762 ROTOR No. 238762

TYPE HBW FRAME 405 PHASE 3 CYCLES 50 CARD NO.

H. P. R. P. M. CONT. 40°C OPEN Ball BRG. ASSEM. DWG. No.

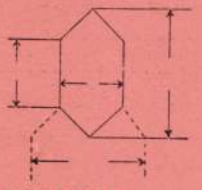
H. P. 20 R. P. M. 725 - 30 Min. 55°C. Tot. Encl.

8 Poles	STATOR	ROTOR
SHEET STEEL GAGE		
OUTSIDE DIAM. LAM.		
INSIDE DIAM. LAM.		
AIR GAP		
TOTAL LENGTH CORE		
NO. & SIZE VENTS		
NO. SLOTS		
SLOT DIE NO.		
LAM. PART NO.	576F	576F
SLANT OF SLOTS		
TOTAL NO. COILS		
COILS PER GROUP		
TOTAL NO. GROUPS		
SPAN		

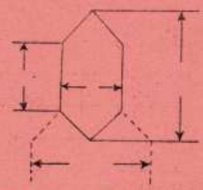
SQ. CAGE ROTOR

	TOP	BOTTOM
NO. BARS		
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	

	STATOR			WOUND ROTOR	
VOLTS	220/440				
TURNS PER COIL					
WIRE SIZE					
KIND WIRE					
WEIGHT WIRE					
CONN.					
CONN. DIAG.					
CROSS CONN.					
NO. OF TERM					
TERM CABLE					
NO. LOAD AMPS					
NO. LOAD K.W.					
LOCKED K.W.					
FULL LOAD AMPS					
LOCKED AMPS					
INRUSH AMPS					
OHMS RES.					



STATOR COIL FORM NO.



ROTOR COIL FORM NO.

SLIP RINGS

NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SEC. VOLTS
1-2	2-3	1-3			1	2	3			1-2	1-3			
380	380	380	380	10	2.0	2.02	2.02	20.13	20	208	-170	760	Open Sat.	176-176-176
380	380	380	380	10	1.98	1.98	2.0	19.87	20	210	-160	1000	750	

METER

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. =

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	
1-2	2-3	1-3			1	2	3			1-2	1-3				
260	260	260	260	40	3.3	3.25	3.2	130	80	335	-55	22,400			
		at	380					190				47,900			

STARTING TORQUE = % F.L. BREAKDOWN TORQUE = % F.L. MAX. RUNNING H.P. = % RATED

METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD
AC

Form No. D-39
2500 1-44 ® 24576

BRAKE — DYNAMOMETER TEST BRAKE CONST. = CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
1-2	2-3 (4)	1-3			1	2	3			1-2	1-3				

FULL LOAD ROTOR AMPERES =

METER

BRAKE — DYNAM. TEST **TEMPERATURE TEST** LOAD = H. P. = % =

H. P.	TORQUE FT.-LB.	EFF.	P. F.	VOLTS			AMPERES			WATTS			R. P. M.	TIME
				1-2	2-3 (4)	1-3	1	2	3	1-2	2-3 (4)	1-3		

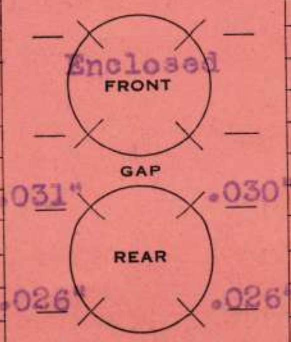
METER

PART	RUNNING TEMPERATURES H. P. % LOAD	SHUT DOWN TEMPERATURES	°C RISE
TIME			
STATOR CORE			
STATOR WIND'G.			
ROTOR CORE			
ROTOR WIND'G.			
SLIP RING			
FR'T. BRG			
REAR BRG.			
AIR IN			
AIR OUT			
ROOM			

					RISE BY RES.	
STATOR RESIST. COLD AT	23 °C	.126	.126	.126		
STATOR RESIST. HOT AT	°C				ST.	°C.
ROTOR RESIST. COLD AT	23 °C	.027	.027	.027	RO.	°C.
ROTOR RESIST. HOT AT	°C					

INSULATION RESISTANCE		DIELECTRIC TEST
STATOR	MEGOHMS 2000	VOLTS A. C. 60 SEC.
ROTOR	" 1500	VOLTS A. C. 60 SEC.
BRUSHES	"	VOLTS A. C. " SEC.

BEARINGS Ball
END PLAY
SLIP RINGS
BRUSHES
STARTING NOISE
NO LOAD NOISE
FULL LOAD NOISE
BEARING NOISE
AIR NOISE



PARTS ORDER NO.	DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO.

REMARKS Test witnessed
by: H. L. Shurr
U.S.23

H. L. Shurr

CARD NO. DATE 4/5/44 TESTED BY S.H.P. O. K. BY

ORD. NO.	FORM
Crane #12363 Bridge Motor	

238761 A. C.

LIST No.

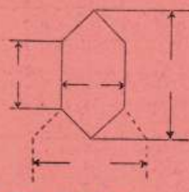
DATE		MACH. No. 238761		STAT. No. 238761		ROTOR No. 238761	
TYPE HEW		FRAME 504		PHASE 3		CYCLES 50	CARD NO.
H. P.		R. P. M.	CONT. 40°C OPEN Ball		BRG. ASSEM. DWG. No.		
H. P. 40		R. P. M. 735 - 30 Min. 55°C. Tot. Encl.					

8 Poles	STATOR	ROTOR
SHEET STEEL GAGE		
OUTSIDE DIAM. LAM.		
INSIDE DIAM. LAM.		
AIR GAP		
TOTAL LENGTH CORE		
NO. & SIZE VENTS		
NO. SLOTS		
SLOT DIE NO.		
LAM. PART NO.	576F	576F
SLANT OF SLOTS		
TOTAL NO. COILS		
COILS PER GROUP		
TOTAL NO. GROUPS		
SPAN		

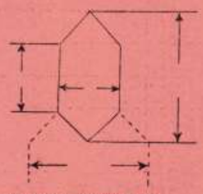
	STATOR			WOUND ROTOR	
VOLTS	220/440				
TURNS PER COIL					
WIRE SIZE					
KIND WIRE					
WEIGHT WIRE					
CONN.					
CONN. DIAG.					
CROSS CONN.					
NO. OF TERM					
TERM CABLE					
NO. LOAD AMPS					
NO. LOAD K.W.					
LOCKED K.W.					
FULL LOAD AMPS					
LOCKED AMPS					
INRUSH AMPS					
OHMS RES.					

SQ. CAGE ROTOR

	TOP	BOTTOM
NO. BARS		
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	



STATOR COIL FORM NO.



ROTOR COIL FORM NO.

SLIP RINGS

NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS 1-2	VOLTS 2-3	VOLTS 1-3	AVE. VOLTS	MULTIP.	AMPERES 1	AMPERES 2	AMPERES 3	AVE. AMPS.	MULTIP.	WATTS 1-2	WATTS 1-3	TOTAL WATTS	R. P. M.	SEC. VOLTS
380	380	380	380	10	3.08	3.08	3.1	30.87	20	320	-245	1500	Open Sat.	160-160-160
380	380	380	380	10	3.06	3.06	3.06	30.6	20	340	-240	2000	750	

METER

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. =

CURVE NO.

VOLTS 1-2	VOLTS 2-3	VOLTS 1-3	AVE. VOLTS	MULTIP.	AMPERES 1	AMPERES 2	AMPERES 3	AVE. AMPS.	MULTIP.	WATTS 1-2	WATTS 1-3	TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	
200	200	200	200	40	4.35	4.35	4.32	173.6	80	310	-100	16,800			
		at	380					330				60,500			

STARTING TORQUE = % F.L. BREAKDOWN TORQUE = % F.L. MAX. RUNNING H.P. = % RATED

METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD
AC

Form No. D-89
2500 1-44 ® 24576

BRAKE — DYNAMOMETER TEST **BRAKE CONST.=** **CURVE NO.**

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
1-2	2-3 (4)	1-3			1	2	3			1-2	1-3				

FULL LOAD ROTOR AMPERES =

METER

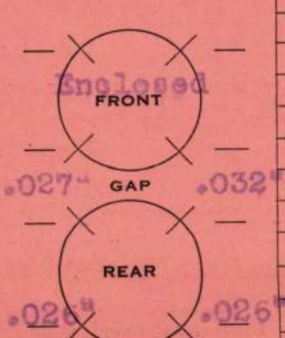
BRAKE — DYNAM. TEST				TEMPERATURE TEST LOAD =						H. P. =		%=		
H. P.	TORQUE FT.-LB.	EFF.	P. F.	VOLTS			AMPERES			WATTS			R. P. M.	TIME
				1-2	2-3 (4)	1-3	1	2	3	1-2	2-3 (4)	1-3		

METER

PART	RUNNING TEMPERATURES H. P. % LOAD	SHUT DOWN TEMPERATURES	°C RISE
TIME			
STATOR			
CORE			
STATOR			
WIND'G.			
ROTOR			
CORE			
ROTOR			
WIND'G.			
SLIP RING			
FR'T. BRG			
REAR BRG.			
AIR IN			
AIR OUT			
ROOM			

STATOR RESIST. COLD AT 24 °C	.127	.127	.127	RISE BY RES.	INSULATION RESISTANCE		DIELECTRIC TEST
STATOR RESIST. HOT AT °C				ST. °C.	STATOR	MEGOHMS	2000 VOLTS A. C. 60 SEC.
ROTOR RESIST. COLD AT 24 °C	.026	.026	.026	RO. °C.	ROTOR	"	1500 VOLTS A. C. 60 SEC.
ROTOR RESIST. HOT AT °C					BRUSHES	"	VOLTS A. C. SEC.

BEARINGS	Ball
END PLAY	
SLIP RINGS	
BRUSHES	
STARTING NOISE	
NO LOAD NOISE	
FULL LOAD NOISE	
BEARING NOISE	
AIR NOISE	



PARTS ORDER NO.	DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO.

REMARKS Test witnessed by:
H.L.Sh[illegible], U.S.23

H.L. Shum

CARD NO. DATE 4/12/44 TESTED BY S.H.P. O. K. BY

ORD. NO.	FORM

Crane #12368

Bridge Motor

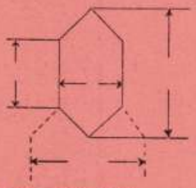
238760 A. C.

LIST No.

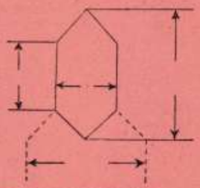
DATE	MACH. No. 238760		STAT. No. 238760		ROTOR No. 238760		
TYPE HEW		FRAME 504		PHASE 3	CYCLES 50		CARD NO.
H. P.	R. P. M.	CONT. 40°C OPEN Ball		BRG. ASSEM. DWG. No.			
H. P. 40	R. P. M. 735 - 30 Min. 55°C. Tot. Encl.						

8 Poles	STATOR	ROTOR		STATOR			WOUND ROTOR	
SHEET STEEL GAGE			VOLTS	220/440				
OUTSIDE DIAM. LAM.			TURNS PER COIL					
INSIDE DIAM. LAM.			WIRE SIZE					
AIR GAP			KIND WIRE					
TOTAL LENGTH CORE			WEIGHT WIRE					
NO. & SIZE VENTS			CONN.					
NO. SLOTS			CONN. DIAG.					
SLOT DIE NO.			CROSS CONN.					
LAM. PART NO.	576F	576F	NO. OF TERM					
SLANT OF SLOTS			TERM CABLE					
TOTAL NO. COILS			NO. LOAD AMPS					
COILS PER GROUP			NO. LOAD K.W.					
TOTAL NO. GROUPS			LOCKED K.W.					
SPAN			FULL LOAD AMPS					
			LOCKED AMPS					
			INRUSH AMPS					
			OHMS RES.					

SQ. CAGE ROTOR	TOP	BOTTOM
NO. BARS		
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	



STATOR COIL FORM NO.



ROTOR COIL FORM NO.

SLIP RINGS	
NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS 1-2	VOLTS 2-3	VOLTS 1-3	AVE. VOLTS	MULTIP.	AMPERES 1	AMPERES 2	AMPERES 3	AVE. AMPS.	MULTIP.	WATTS 1-2	WATTS 1-3	TOTAL WATTS	R. P. M.	SEC. VOLTS
380	380	380	380	10	3.05	3.07	3.06	30.6	20	320	-250	1400	Open Sat.	160-160-161
380	380	380	380	10	3.04	3.05	3.05	30.47	20	330	-240	1800	750	
													METER	

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. =

CURVE NO.

VOLTS 1-2	VOLTS 2-3	VOLTS 1-3	AVE. VOLTS	MULTIP.	AMPERES 1	AMPERES 2	AMPERES 3	AVE. AMPS.	MULTIP.	WATTS 1-2	WATTS 1-3	TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	
200	200	200	200	40	4.38	4.35	4.35	174.4	80	310	-110	16,000			
		at	380					332				57,800			

STARTING TORQUE = % F.L. BREAKDOWN TORQUE = % F.L. MAX. RUNNING H.P. = % RATED

METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD
AC

Form No. D-39
2500 1-44 ® 24576

BRAKE — DYNAMOMETER TEST | BRAKE CONST. = | CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SLIP %	SCALE LBS.
1-2	2-3 (4)	1-3			1	2	3			1-2	1-3				

FULL LOAD ROTOR AMPERES =

TEMPERATURE TEST | LOAD = | H. P. = | % =

BRAKE — DYNAM. TEST				VOLTS			AMPERES			WATTS			R. P. M.	TIME
H. P.	TORQUE FT.-LB.	EFF.	P. F.	1-2	2-3 (4)	1-3	1	2	3	1-2	2-3 (4)	1-3		METER
														METER

PART	RUNNING TEMPERATURES H. P. % LOAD	SHUT DOWN TEMPERATURES	°C RISE
TIME			
STATOR CORE			
STATOR WIND'G.			
ROTOR CORE			
ROTOR WIND'G.			
SLIP RING			
FR'T. BRG			
REAR BRG.			
AIR IN			
AIR OUT			
ROOM			

STATOR RESIST. COLD AT	24 °C	.088	.088	.088	RISE BY RES.
STATOR RESIST. HOT AT	°C				ST. °C
ROTOR RESIST. COLD AT	24 °C	.032	.032	.032	RO. °C
ROTOR RESIST. HOT AT	°C				

INSULATION RESISTANCE		DIELECTRIC TEST
STATOR	MEGOHMS	2000 VOLTS A. C. 60 SEC.
ROTOR	"	1500 VOLTS A. C. 60 SEC.
BRUSHES	"	1500 VOLTS A. C. 60 SEC.

BEARINGS Ball

END PLAY

SLIP RINGS

BRUSHES

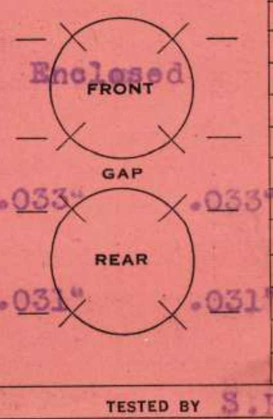
STARTING NOISE

NO LOAD NOISE

FULL LOAD NOISE

BEARING NOISE

AIR NOISE



PARTS ORDER NO.	DATE

RECEIVED
MAY 2 1944
HARZA ENGINEERING CO.

REMARKS Test witnessed by:
H.L.Shorn, U.S.23
H.L. Shorn

CARD NO. DATE 4/6/44 TESTED BY S.H.P. O. K. BY

ORD. NO.	FORM
Crane #12563 Main Hoist	

238759 A. C.

LIST No.

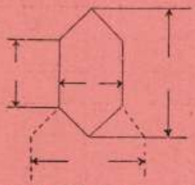
DATE		MACH. No. 238759		STAT. No. 238759		ROTOR No. 238759	
TYPE HBW		FRAME 504		PHASE 3		CYCLES 50	CARD NO.
H. P.	R. P. M.	CONT. 40°C OPEN		Ball	BRG. ASSEM. DWG. No.		
H. P. 50	R. P. M. 970 - 30 Min. 55°C. Tot. Encl.						

6 Poles	STATOR	ROTOR
SHEET STEEL GAGE		
OUTSIDE DIAM. LAM.		
INSIDE DIAM. LAM.		
AIR GAP		
TOTAL LENGTH CORE		
NO. & SIZE VENTS		
NO. SLOTS		
SLOT DIE NO.		
LAM. PART NO.	576F	576F
SLANT OF SLOTS		
TOTAL NO. COILS		
COILS PER GROUP		
TOTAL NO. GROUPS		
SPAN		

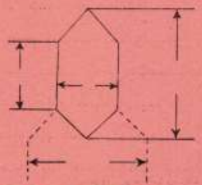
	STATOR			WOUND ROTOR	
VOLTS	220/440				
TURNS PER COIL					
WIRE SIZE					
KIND WIRE					
WEIGHT WIRE					
CONN.					
CONN. DIAG.					
CROSS CONN.					
NO. OF TERM					
TERM CABLE					
NO. LOAD AMPS					
NO. LOAD K.W.					
LOCKED K.W.					
FULL LOAD AMPS					
LOCKED AMPS					
INRUSH AMPS					
OHMS RES.					

SQ. CAGE ROTOR

	TOP	BOTTOM
NO. BARS		
BAR SIZE		
BAR MAT.		
NO. RINGS		
RING SIZE		
RING MAT.		
RING NO.	574H	



STATOR COIL FORM NO.



ROTOR COIL FORM NO.

SLIP RINGS

NO. RINGS	
BR. PER RING	
BRUSH SIZE	
BRUSH MAKE	
BRUSH GRADE	

NO. LOAD & OPEN SATURATION

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	R. P. M.	SEC. VOLTS
1-2	2-3	1-3			1	2	3			1-2	1-3		Open	
380	380	380	380	10	2.95	2.95	2.93	29.43	20	318	-233	1700	Sat.	213-213-213
380	380	380	380	10	2.94	2.92	2.92	2927	20	335	-210	2500	999	

METER

LOCKED SATURATION & STARTING TORQUE

BRAKE CONST. =

CURVE NO.

VOLTS			AVE. VOLTS	MULTIP.	AMPERES			AVE. AMPS.	MULTIP.	WATTS		TOTAL WATTS	SCALE LBS.	TORQUE FT.-LBS.	
1-2	2-3	1-3			1	2	3			1-2	1-3				
150	150	150	150	40	4.5	4.5	4.45	179.3	80	240	-80	12,800			
		at	380					455				82,200			

STARTING TORQUE = % F.L. BREAKDOWN TORQUE = % F.L. MAX. RUNNING H.P. = % RATED

METER

HARNISCHFEGER CORP.
MILWAUKEE, WIS.

TEST CARD
AC

Form No. D-89
2500 1-44 24576